PRACTICAL MANAGEMENT RESEARCH

A. R. WIREN *and* C. HEYEL

INDUSTRIAL ORGANIZATION AND MANAGEMENT SERIES

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L. C. Morrow, *Consulting Editor*

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PRACTICAL MANAGEMENT RESEARCH

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PRACTICAL MANAGEMENT RESEARCH

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PREFACE

This book resulted from a somewhat unusual sequence of events. Both the authors, in a different manner, had the privilege of being closely associated for a number of years with a great many business and professional leaders who were guiding enterprises in a wide variety of fields. Both were profoundly impressed by the similarity in the approach of these successful business leaders to their problems. As the years passed, these impressions, considered in the perspective of personal experience, began to form into a definite pattern of management thinking. As will be noted, the importance of human relations looms large in this pattern.

An unsuccessful search on the part of one author for a book devoted entirely to the question of management research resulted in the first steps of assembling material on this subject. In the meantime, the other had written several books on management problems. An accidental meeting of the authors resulted in extensive discussion of the subject, which soon disclosed the fact that they held similar views (possibly owing in part to the fact that both are engineers by training) and virtually identical approaches to the questions. The belief that management research deserves greater attention than it has been given in the past resulted in this joint effort.

The authors owe an expression of grateful appreciation to many: First of all, to the persons referred to in the opening paragraph, who were a constant inspiration to all who had the privilege of working with them. Specifically, to Ernest

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D. Ward, Manager, Public Relations, Best Foods, Inc., who provided encouragement when the initial material was being written; C. H. Bovell, Employee Relations Manager, Johns-Manville Corp., and Eli Tash, Merchandise Councilor, R. H. Macy & Co., Inc., who both read the entire manuscript and gave a number of extremely valuable suggestions. Mr. Tash also read proofs, adding further suggestions as to organization and presentation.

The Check List of Advanced Management Practice was reviewed in draft form by representative executives in leading companies, who were kind enough to give their suggestions as to the whole or as to sections of specific interest to them. Among these the authors are especially indebted to Arthur L. Manchee, General Manager, L. Bamberger & Co., who made many practical suggestions. Others to whom we owe thanks for help on this section are:

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Needless to say, in making the above acknowledgments, we impute no responsibility to others for any statements made in this book beyond case material appearing specifically under their signatures.

Alexis R. Wiren,
Carl Heyel.

New York City,
May, 1945.

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CHAPTER I

WHAT THIS BOOK IS ABOUT

This book discusses the use of scientific research techniques in business. It is concerned with the application of research principles to general management problems as well as to specific operating functions. In order to make these techniques effective, it places primary emphasis on the attitude of mind with which management problems are approached, demanding, above all, a critical appraisal of facts and surmises and a continuing awareness of the human equation when data are gathered, conclusions drawn, and actions outlined. A "how-to-do-it" manual, it has been designed especially for three types of users.

Primarily, it is for the staff executive whose job it is to gather and interpret data on the basis of which decisions, often of a far-reaching policy nature, can be based; and to follow through with the various operating departments involved to see that actions decided upon are carried out properly. In this book, this executive is termed a specialist in "management research," although the function may actually be performed under a variety of titles or even as a part-time responsibility not dignified by a formal place in the organization chart.

Second, it is for the top executive charged with the responsibility of administering a large-scale, ramified enterprise, who may want to facilitate the smooth functioning of his organization by providing himself with the eyes and ears of management research. He can thus assure himself that administrative and management decisions are based on adequate data, presented with meaningful emphasis and interpretation.

Third, it is for the divisional or departmental executive who, while not primarily concerned with company-wide problems, nevertheless can see the advantages of applying the scientific approach to operating problems—especially in handling the human element upon which he must depend for his results.

But, first of all, what do we mean by "management research"? Few terms are subject to as wide a variety of interpretations as "research." To some people it implies a prolonged study which has little likelihood of producing practical results. To others it means anything involving "looking up" some information, even if only in the classified section of the telephone directory. In the fields of science and engineering, "research" has the definite meaning of searching for a specific solution to a given problem—the development of a chemical formula for material that will meet certain specifications or the design of a new piece of equipment to perform satisfactorily under given conditions. In the case of "pure" as distinguished from "applied" research, it may mean the search for a logical explanation of certain observed phenomena, without an immediate application in mind.

"Management research" as used in this book has the broadest possible connotation. It is not mere "problem solving," although, of course, it is applied in the systematic solution of specific management problems. It includes the *creative thinking* which leads to the recognition and statement of new problems—the determination of sound, over-all objectives—as well as the development of formulas, plans of action, and follow-through. Above all, it emphasizes not only the gathering of data (opinions as well as facts), but the intelligent interpretation and presentation of these data, so that sound decisions can be taken.

Of course, no management step is ever taken in complete darkness. Every decision implies the interpretation of pertinent information by somebody, even if, in many instances, the information is not explicit or formalized (as when a seasoned, successful operator merely applies what he terms "common sense" or "judgment"—actually a more or less intuitive and spontaneous selection and totalizing of pertinent experiences out of a whole storehouse of memories).

Since this book is dedicated to the scientific research approach, it advocates formalized and reasoned procedures in place of intuition and "hunches" wherever possible, without for a moment deprecating the need for sound judgments based on practical experience.

We have alluded to the specialist in management research. His field is undoubtedly one of the most varied and interesting in the entire domain of management. It is also, however, an extremely exacting one, requiring not only a great capacity for the accumulation and sifting of detail, but also a sense of broad perspective and an eagerness for continued growth, enabling the practitioner to appreciate at once the problems at the operating level, as well as those faced by top executives charged with the responsibility of guiding the whole enterprise.

The person devoting himself to management research must have a high degree of mental alertness and the ability to realize quickly when evidence is superficial and may lead to wrong conclusions, so that deeper, more fundamental probing must be done. In addition, he must have the faculty of sensing similarities in seemingly unrelated situations. This is basically the ability to select from past experience situations which have elements in common with one at hand and, often without apparent effort, to select those which will provide the most promising approach to a current problem.

The application of management research will make the work of the policy-making executive easier. It will minimize the danger of false starts and, indeed, of launching projects which should not be undertaken at all. It will help reduce expenses by bringing avoidable wastes to light and by providing danger signals to give warning that performance is about to fall short of plans. Finally, under proper auspices, it will contribute to the morale of the organization as a whole, arousing enthusiasm for better methods and more teamwork.

So much for subject; now for the method used in this book. The reader will soon discern two basic principles followed in the organization of our material.

First, this book is not primarily a collection of case studies, although examples are given to illustrate and clarify points made in the text and Part II is devoted to certain representative examples of systematic management thinking. The field of management research is so broad that the case-study treatment would have been impracticable from the point of view of space alone, even if the authors' personal experience had been comprehensive enough to embrace all conceivable types of problems that can be encountered. But, more important, case-study treatment would have been unsatisfactory because of the very basic nature of management research as here conceived. Applied to the systematic solution of management problems, it is strategic as well as tactical, dealing, as already emphasized, with basic objectives as well as with action. *This book therefore sets out to develop a pattern of thinking about problems, with the assumption that it is more important to discuss how to think about a whole class of problems, than to tell how a particular problem within a class was solved.*

Second, one common thread has been chosen with which to tie together all of the concepts and modes of attack discussed. That is the thread of human relations, which will be seen to run through every chapter. Naturally, procedures and statistical approaches not directly tied up with the human element are not overlooked; but the human equation is paramount in every formula developed. That is because business is, after all, done by, through, and for people. The very word "company" used to designate a business organization has the right connotation—a company of *people* banded together to produce a product or a service as efficiently as possible. No executive, however brilliant, can hope to administer an enterprise on the strength of statistics, physical formulas, or abstract concepts alone. He is dealing with a living organism—not merely with an "organization"—whose cells (people) do not necessarily react logically, but are influenced by emotion, impulse, and prejudice. No management research man, however thorough, can gather and interpret data as though he were in a physics or chemistry laboratory, where the subjects of his researches would not confuse him by capricious action.

Part One

THE PRINCIPLES OF PRACTICAL MANAGEMENT RESEARCH

CHAPTER II

THE NEED FOR MANAGEMENT RESEARCH

If a captain on board ship wants to change plans for the voyage, his officers must provide him with a variety of data. The navigating officer determines the geographical position, the chief engineer establishes the cruising radius with the available supply of fuel, the ship's commissary officer reports upon the food supplies. With these data before him, and bearing in mind the question as to where additional supplies of food or fuel may be secured, the captain can make a decision as to the course to be taken. He will also have to estimate dangers beyond his control—hazards of the elements or, in war, of enemy action—and reckon with them in his planning.

For a business enterprise to determine its position, select its destination, and decide upon its immediate course, an even greater variety of data is usually required.

What factors establish the present position of a firm? One cannot take a simple longitude and latitude, the intersection of which would give the position. Financial ratios may be important indicators, but there are many others—personalities of key executives, standing in the trade, current consumer acceptance, and the like—which may be more important than immediate financial strength.

A company's commanding position in its field may, in some instances, be due primarily to one factor: to a patent situation or other special condition which renders it more or less immune to immediate competition; or to some special genius in its conduct of sales or advertising; or perhaps to its dominant control over raw materials. However, if despite its outstanding advantage it does not try to achieve maximum efficiency in *all* functions, it will not attain the immediate profits to which it is entitled. Worse still, it will run the risk of vulnerability to competition at some future date.

"Constant vigilance is the price of success." It is the function of management research, as the eyes and ears and —at least in the sense that it acts as a catalyst—the brains of management, to provide vigilance and to help formulate action based upon it. Management research can contribute to the control and guidance of a business by providing data and interpretations for

Long-term planning and the formulation of specific objectives, and the development of suitable indices for management perspective
The development of definite policies on major issues
The most effective distribution of responsibility and authority within the organization
Dealing with emergencies
Setting up yardsticks or barometers of performance
Prescribing appropriate action when "danger zones" are entered
Creating and maintaining a responsive, enthusiastic attitude toward the work of the company on the part of the employees
Coordinating the work of various divisions and departments

Long-term Planning and Specific Objectives

Competent stewardship demands that the company's profit position be maintained not only this year and next, but five and ten years ahead as well. Indeed, one well-known chemical company recently announced a "Thirty-five Year Plan" to its stockholders. Long-term planning is peculiarly the domain of top management, and it is there that management research can make its most important contribution. As a precision tool in management thinking, it will make possible the definition, isolation, and solution of problems which otherwise would be only vaguely apprehended.

Many executives favor long-term planning in theory, while they are actually opportunists in practice, fitting their actions to conditions as they arise. How many of the conditions that turn out to be troublesome could have been foreseen is a moot question, but intelligent research will certainly remove much of the haze from the road ahead. For example, when it became inevitable that the United States would enter the Second World War, it was clear that shortages of materials and dislocations in man power would sooner or later touch every enterprise. Those who made plans to meet these changes were in a better position to cope with conditions when they arose. Managements that kept in touch with labor turnover rates in their industries and in industry generally, so as to have an intelligent measure of the seriousness of their own situation, and that kept abreast of ways and means of combating the problem, had a stronger personnel setup than those who let the war condition overwhelm them unprepared.

Long-term planning inevitably embraces problems which grow out of general trends or changing conditions in an industry over which no direct control can be exercised, but which must be understood and met intelligently—broad economic forces, technological developments, changing markets, and the like. The fact that management research must deal with these intangibles, as well as with specific internal conditions which can be analyzed and corrected, emphasizes the versatility demanded of the management-research executive.

In many companies, a creative job can be done in setting up a series of indices covering business in general and the company's industry in particular, which will serve as "bench marks" in determining company policy. Examples are given in Chap. IV.

The implementation of a strategic military plan calls for the attainment of a series of coordinated specific objectives. Similarly, long-term business planning will result in the setting up of numerous specific objectives or problems. Chapter V discusses in detail the technique of attacking such problems systematically. Here we wish to emphasize the role to be played by management research in helping to formulate such problems in the first place.

Shall a new plant be built? The *what kind*, the *where*, the *how expensive*, etc., are important but are questions subordinate to the basic one of whether the long-term prospects, regional trends, current technological developments, and the like justify considering a new plant.

The general tendency of enterprise is to desire further expansion. But expansion is not always beneficial, and many a firm which accepted a huge volume of business has lived to regret it. A certain amount of business risk must be accepted, but the question should often be asked, "Will a certain type of sales be profitable enough to justify the risks involved or to justify dislocations among long-established customers?"

The executive who must make the final decision in matters of this sort must have reliable data to support his judgment—facts concerning past experience (of other companies as well as his own) and estimates of trends.

Mistakes of judgment in this area of management are the most costly ones that can be made. Sometimes they are irreparable and result in the failure of a company or in its complete financial and top-management reorganization. Anyone who has had any appreciable business experience can recall examples: Vanity, which caused the head of a family-owned department store to raise a tremendous and ornate monument (tombstone!) in the form of a huge building, overfixtured, far beyond the economic capacity of his town to absorb for another decade; shortsightedness, which led the directors of a large paper company to approve the construction of a large mill in the Northwest, obsolete even before it was completed, since the trend of the industry was toward the exploitation of fast-growing Southern pine; the "Rube Goldberg" complex of a mechanical-minded executive vice-president, which resulted in a plant full of complicated conveyer and materials-handling equipment, whereas an analysis by a motion- and time-study engineer later showed that relayout of processes and improvement of specific operations would have made most of the mechanization unnecessary.[1]

Unfortunately, outstanding errors of judgment of this sort are more spectacular and dramatic than the even tenor pursued when they are avoided. That is why the real value of a sound management research program is often not appreciated. A million dollars in sales is a direct, tangible accretion. Yet, in terms of profits, those sales may be of no greater balance-sheet worth than $100,000 in expenses saved by the application of management research to the cost of operations. The lower the rate of profit, the greater is the relative contribution of the saving.

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[1] This whole matter of basing objectives on facts and on sound interpretation of facts was refreshingly discussed in an article, "Inexorable Economics," in the December, 1943, issue of *The Drug and Cosmetic Industry*. Mr. Francis Chilson, a production engineer, wrote: "Common sense and simple arithmetic are wonderful things if we take time to use them . . . One of my clients had a hot idea about building a trestle from an elevated railway nearby into his factory to eliminate his drayage bill, which amounted to something like $40,000. The cost of the project was estimated at $125,000. On the face of it, it looked like a good investment. The president of the firm told me triumphantly that it would pay out in three years. He was all steamed up to get going right away until I threw very cold water on the whole harebrained scheme. Depreciation and maintenance on the trestle and on the necessary conveyors that would be required to make it work would amount to $8,700 a year. I then pointed out that at the rate the business was growing, the entire plant would, in a two-year period, outgrow the building altogether, in view of which there didn't seem to be any sense in adding a $125,000 trestle to a building, which would become hopelessly inadequate long before the trestle could be amortized in savings, and which in itself, since the building was 50 years old, would not bring more than $50,000 or $60,000 in the open market. Finally it was pointed out that the trucking bill was high because it was based on rates set up when the business was small and that no one had ever tried by competitive means to beat the rates down. By the simple expedient of a conference with the trucking concern that had enjoyed the business for several years, the freight bill was reduced by $10,000. Moreover, it was pointed out that the final answer was to operate their own trucks as soon as they could get them and to begin at once on the plans for a new plant, so located that trucking to a siding would never be a problem. Incidentally it was also pointed out as a climax, that the whole trucking bill couldn't have been saved anyway because about a quarter of the amount was spent for truck deliveries to local and nearby areas."

Definite Policies on Major Issues

Too many rules and regulations detract from the flexibility of an organization. At the same time, lack of established policies on major issues creates confusion both within and without. The service which management research may render in this connection is in bringing to light evidence that established policies are no longer in tune with existing conditions, and in determining whether actual operating practice is in conflict with announced policy.

Matters of sales policy, for example, are of outstanding importance, and an ill-conceived policy or poor execution of a sound policy may play havoc with a company's standing in the trade. Shall a company's products be distributed through certain types of outlets only, with perhaps exclusive arrangements with one or two dealers in a city? Shall salesmen making direct calls be permitted to compete with wholesalers' men? Shall a product be "fair-traded" to enforce maintenance of price? Obviously, these are all basic problems of long-term significance, requiring the most careful kind of thinking.

No part of the contribution of research is more important than its help in determining when long-established policies should be changed. With respect to sales, for example, many manufacturers of proprietary products—and others traditionally distributed through retail drug outlets—studiously avoided selling through grocery outlets, because of the antagonism of retail druggists. However, the phenomenal growth of supermarkets during the past eight or ten years changed the picture. Many supermarketers, especially during wartime years when their regular merchandise was restricted, opened drug departments. Since, in the last analysis, the shopper is "boss," many manufacturers had to decide whether the volume being done by this class of outlet was something they could afford to overlook, and broadened their distribution despite the hazard of ill will on the part of their traditional channels. Obviously, the timing of this sort of move is an extremely delicate operation, in which the data and interpretations supplied by management research can be invaluable.

Fundamental policies with respect to labor furnish another example. During recent years of labor unrest, there has been more and more advocacy of putting basic labor policies down in black and white; yet most companies have apparently not thought through the problem sufficiently to do so.

Part of the trouble lies in the confusion that seems to persist as to what constitute basic labor policies, and what are merely rules and regulations. Yet a distinction seems quite possible. Basic policies should be a sort of Bill of Rights that sets forth the fundamental relationship between employees and management, that should stand unaffected by booms or depressions, and that should, indeed, be conceived to stay in force indefinitely.

Changes in such a Bill of Rights should be made only after the most careful deliberation and, if possible (and here, indeed, is an opportunity for management research!), a survey of employee attitudes.

Rules and regulations, as distinguished from policies, are the laws and ordinances based on the underlying Bill of Rights. They facilitate carrying out the company's objectives by making the actions of individuals in the organization dependable and predictable. They can be adjusted to current needs on relatively short notice.

For example, a statement by a company that it believes in annual vacations with pay for all employees is a declaration of fundamental policy; statements setting forth the vacation times for certain departments, the lengths of service that entitle employees to specified vacation periods, and the way compensation for vacations will be made are rules and regulations.

A published set of labor-relations policies cannot be made in a vacuum. Management needs, for perspective, information as to policies in other companies, trends in the industry, public reaction, and the like. Data and interpretations as to all of these are obviously in the province of management research.

Distribution of Responsibility and Authority

It is a truism that no company can be better than its management; indeed, in the eyes of some management experts, the caliber of the management staff is everything—more important even than the product the company makes and sells (for, if the product is at fault, good management will soon correct it). Andrew Carnegie once said that he would rather lose the entire equipment of a company than the men; "One can buy the equipment, but one has to build the men." But management itself is no better than its *organization* and *personnel*—with authorities and responsibilities clearly defined and delegated, with "crossed wires" and internal "politics" kept at a minimum.

Organization charts are a step in the right direction, but they are guides, and not the solution in themselves. In actual practice, organizations behave as though they were made of India rubber, expanding and contracting in accordance with the personalities and capabilities of executives assigned to specific functions. Aggressive persons usually are willing to assume authority even when it may logically belong elsewhere. Often, however, this aggressiveness is not accompanied by a willingness to accept the responsibility for results. The result, in popular parlance, is "buck passing."

On the other hand, many persons upon whom definite responsibilities should devolve are hesitant about making decisions and standing by the results, and equally unprepared to delegate authority. Also, many department heads are unwilling to raise a question as to whether a certain matter is within their jurisdiction, for fear that it may be a reflection upon them. As a result, certain operations may be carried on in a very hazy atmosphere of conflicting authorities and prestige.

To a large extent, organizational confusion reflects insufficient attention by top management to this important problem. For example, if the president of a corporation advanced to his position through the sales organization, the chances are that he may not be sufficiently versed in detailed operating problems to give sympathetic attention to the need for clear-cut authorities and responsibilities in the production end of the business. This may pose especially serious problems under conditions that have prevailed in recent years, when, in the space of a very few years or even months, there have been violent swings from situations demanding aggressive sales action and market maneuvering to periods of labor unrest or shortages of materials, labor, and productive capacity.

One large company, expanding rapidly even before the war emergency, suddenly found itself a leader in its industry, operating the largest plant of its kind in the world. While it could boast the best technical facilities available, it achieved a negative reputation by the constant organizational turmoil in which it found itself. In the space of only two years, four works managers had to be appointed for the new plant in quick succession. It seemed impossible to develop a formula for properly dividing authority between the local management and the executive offices in New York. The new works managers, who brought in with them a succession of key executives, found themselves in constant hot water. The resulting confusion was reflected in a falling off of tonnage, a truculent labor situation, and very adverse public relations in the community which had welcomed the enterprise with open arms but a few short years before.

Even where poor organization is not manifest in such a dramatic way, it may exist under the surface to a greater extent than suspected, and result in loss of energy and time in obtaining necessary approvals or decisions, and in poor employee morale. As part of their daily work, members of the management research staff must be on a constant lookout for difficulties arising from this cause. Similarly, special alertness must be maintained to sense changing conditions which might call for a change in authority and responsibility.

Dealing with Emergencies

The ability of an organization to deal promptly and effectively with an emergency is to a great extent indicative of the quality of its management. The almost astronomical rates of increase which some of our aircraft and other industries had to undergo to meet wartime needs proved beyond all doubt the high quality of American business leadership. But startling differences were shown up among companies in the same industry or even divisions of the same company. Thus we have had the wizardry of a Douglas in one part of the aircraft industry, along with the spectacle of the government having to take over an Eastern aircraft company because it just did not seem to have the knack of ironing out its difficulties of personnel and procedures. We have seen widespread praise for the over-all achievement of a large corporation, the while the Truman Senate Investigating Committee brought grave charges against a specific division, forcing a change in local management.

But emergencies are not, as a rule, of the breath-taking, cataclysmic variety brought on by war. The emergencies that breed cumulative wastes are those that occur in the more or less routine course of business, of which no single one may be of sufficient importance to reach top-management awareness. The question, "What is an emergency?" is not easy to answer with a precise definition. As a result, many people are inclined to pass by a situation which calls for immediate action, and do nothing about it, whereas a trained observer may at a glance project an individual untoward occurrence into its proper perspective.

The delivery department of a large merchandising organization held up a sizable number of orders before Christmas each year, because these orders consisted of a number of packages, and the packages had somehow become separated. The procedure was to return such incomplete orders to the store and to wait either for the various separated packages to be returned also, and finally reassembled, or for a complaint to come in from the customer. When the management research staff found out about this procedure, it viewed the underlying condition as an emergency and called it to the attention of a senior executive. Immediate correction was demanded, and a system was therefore established under which all missing items were added to a "separated" order at once, with delivery made the next day. Later, when the separated packages turned up, they were sent back to stock. The importance of this move in preventing complaints and avoiding the ill will of those who did not complain is obvious.

It is the responsibility of management research personnel to look into all matters that come to their attention which seem to have the element of emergency about them. Many of these will turn up in the course of management studies. The important question is whether the situation is a nonrecurring emergency or the result of some flaw in procedure.

Yardsticks or Barometers of Performance

Once objectives and plans are set, it is obviously important that the head of an organization be able to assure himself, from time to time, that satisfactory progress is being made. He should not be bothered with a multitude of minor facts, but he should have before him, periodically, progress reports which give at a glance both the current picture and trends brought out by significant comparisons. Without such facts, management is not in a position to give further encouragement where it is earned, or scrutiny where expected results were not achieved. Similarly, reliable indicators, or "danger signals," are needed, calling attention to the fact that in some phase of its operations an organization has entered a "danger zone," and that immediate corrective measures must be undertaken. Without these, costly and avoidable wastes may be incurred.

Naturally, most of the indices here alluded to are of a statistical nature, and the problem of sound interpretation must again be emphasized. It is up to management research personnel to be familiar with the exact nature of data, the methods used in compilation, and the changes which take place in procedure from time to time. They should make suggestions, wherever necessary, that data be uniform, so that facts available with regard to one phase of performance can be related easily to other operations, when questions of correlation come up.

War conditions may affect performance by introducing an element of uncontrolled effects which must never be lost sight of in making comparisons. For example, it is obvious that, if the question of labor turnover is being considered, the separations caused by induction of employees into military service must be taken out of the figures when comparisons with prewar years are made. Similarly, excise taxes passed as part of our war effort greatly distort certain sales comparisons. February sales of department stores in 1943 were the highest in history, because customers were anticipating shoe and other rationing. As a result, Federal Reserve figures on department-store sales, which always emphasize percentage gain or loss over the same week of the previous year, showed large drops for some of the weeks of February, 1944. Submission of such data without marginal notes interpreting this unusual situation would have been meaningless, for in fact the retail picture in 1944 continued to show over-all gains. Similarly, a retail sales tax on cosmetics and jewelry, taking effect April 1, 1944, greatly distorted statistics on those products.

Immediate Action When Danger Zones Are Entered

This problem is closely related to the one discussed under "dealing with emergencies." Emergencies, however, refer to new or unexpected problems, while danger zone implies that the possibility of the problem has been definitely foreseen and that suitable plans are in reserve for dealing with it. Pearl Harbor is an example. The approach of a formation of airplanes was detected and reported; this should have called for immediate, prearranged action—which, unfortunately, was not forthcoming.

Safety signals are not safety "valves." In management one cannot as a rule install a "valve" which will automatically release the pressure if it exceeds a certain maximum. Usually the devices that have been set up only call the attention of the executives to the fact that a danger zone has been reached. Action must be taken by the executives.

The important point, of course, is to have a plan of action definitely decided upon in advance, so that full advantage of past experience and unharried judgment can be taken at once and the situation brought under control without delay. For example, if it is known that because of certain seasonal factors one division of the organization has an extraordinary increase in the volume of work it handles, while another one happens to have a comparatively quiet period at that season, it may be arranged in advance that, as soon as the volume of incoming work has reached a certain point, employees from the less busy unit are transferred temporarily to the one under pressure. This may even be worked out in accordance with a definite schedule, authorizing the hard-pressed division to claim additional people in direct proportion to units of work received in excess of an established quota.

Management research personnel should be helpful in working out specific plans for action when danger zones are entered and should further contribute to the constant improvement of methods for handling such situations.

Creating "Job Enthusiasm"

The morale factor in an organization will always elude precise measurement, yet it is one of the most important elements in attaining maximum effectiveness. There is a tremendous opportunity for profit available to management in the idea of job enthusiasm—making people *want* to work, rather than merely giving them a chance to work. Of two organizations with the same directive skills at their command, and with access to the same sources of labor and materials, the one whose entire organization is filled with enthusiasm for what the company is trying to do is bound to forge to the front.

The human-relations problem of instilling and maintaining the most constructive attitude on the part of employees is a definite top-management responsibility. For no matter how excellent the formalized personnel organization is, the important intangible of enthusiasm depends upon top-management awareness and top-management example. The management-research executive has an excellent opportunity here. In the first place, his detached position gives him a unique opportunity to observe the morale factor, and to sense whether management policies are being interpreted in the spirit in which they were promulgated. Here his function as "eyes and ears of management" comes into play. By far most of the derelictions of management with respect to human relations are due to preoccupation with problems of finance or sales or production, and not to stubbornness or downright lack of humane instincts. Many of the grievances that rankle most are due to something of which the man in top authority is entirely unaware, because he is usually too far removed from the details of operations to know that improper conditions exist. It is the responsibility of management research to foster top-management awareness of human problems.

Secondly, if he is at all successful in his staff job, the management-research executive will have acquired the knack of getting results through cooperation and persuasion, rather than by direct authority, since the operating men through whom he gets results are part of a line organization and report to their own higher executives. He should always be carrying on an unobstrusive educational campaign among operating men—especially the older, "hard-boiled" school of operating executives—on the importance of human relations in management; on the leadership approach in getting things done by others, as opposed to the "boss" principle; on the desirability of having discipline spontaneous, working from the bottom up rather than imposed from the top down. One way to get such ideas across is at supervisory or foremen meetings, for frequently the personnel division or other agency responsible for foremen education will arrange to have certain staff executives address one or more of the discussion groups.

Third, the management-research man is frequently in a position to improve human relations in a specific department—provided, of course, that he preserves at all times the most punctiliously correct attitude. When he conducts management studies, he can observe the reactions of a particular employee or group of employees, and be helpful in bringing to the attention of operating executives "problem cases" or other special situations which might normally be overlooked. He can also be especially helpful in bringing to notice good work, or constructive suggestions, which might otherwise go unrewarded.

Finally, and most important, it is the function of the management research executive to keep his company informed of advanced personnel practices in its own industry, and in industry generally. In this way, his company will be up to date in adopting proved techniques with respect to such things as merit rating of employees, safety practices, suggestion systems, training, and selection. It must be remembered that the personnel policies and practices of an organization soon become known in the community and throughout the industry, and have an obvious effect upon public relations. They have a direct bearing on the type of applicants for jobs, the length of time they are willing to stay with the company, their interest in furthering the objectives of the enterprise, and the like. No company can afford to lag too far behind enlightened practice.

Coordination

Every independently thinking executive, in developing the particular division for which he is responsible, makes a series of improvements and adaptations. The type of work done by other departments may be totally different, yet the same principles, applied to their work, may be just as successful. Maximum efficiency of the whole organization calls for the pooling of techniques developed in individual departments. In order that improved methods become usable in all departments, they must be translated into some universally understandable language, and properly distributed. This result will be accomplished much more readily if it is made the responsibility of an independent management research department.

The formulation of suitable management controls requires a similar process of coordination. If such controls are developed independently, meaningful cross comparisons may be difficult or impossible, and it may indeed be impossible for the chief executive to draw any usable interpretations from them without a "translation." They may not be correlated properly to basic factors affecting the entire organization, and for that reason they may indicate trends of minor instead of major importance.

The need for prompt change in policy or procedure as a result of an emergency is another case in point. Delegation of research and follow-through to special committees not only means loss of time, but also may cause confusion. It is essential that those who are asked to assemble data for the principal executive in case of emergency be fully aware of the interrelations of the various divisions of the organization, and how the emergency will affect each of them. Taking one of the senior executives off the job and assigning him the responsibility of securing the necessary data often creates as many problems as it solves. Usually it not only means delay, but also sows the seeds of subsequent difficulties, because it may make him slight some of the problems to which he should be devoting his time.

Finally, a most important job of coordination can be done by seeing that all departments and executives involved are made immediately aware of any change in policy. Recent problems with organized labor have emphasized this need. Managements have often not kept responsible operating executives informed of negotiations with unions, so that these executives first learned of developments from shop stewards. The effect of such shortsightedness on employee discipline and on the morale of the executives is obvious. It might be argued that this is a matter of enlightened management, and not especially one of management research. The answer is that it is actually a matter of top-management education. As a liaison man in a peculiarly advantageous position between top management and operating departments, the management research executive has an excellent opportunity to espouse the cause of "consultative management" with respect to labor problems as well as other matters of management concern.

The Value of Management Research

The ultimate test of the success of a business enterprise is its ability to meet changing conditions and continue to stay in business and improve its performance.

The usual tendency of an enterprise is to increase its nonproductive expenses. If unchecked, this tendency can reach such a point that competitive position is impaired. As a rule, a business organization has no provision for its own internal "public opinion," and its statistical statements and general reports often do not fully reflect the true picture of the organization as an efficient working unit. If this were not so, business failures would not be as frequent as they are, for the management or the investors would see that necessary action was taken before the situation got entirely out of hand.

Management research cannot prevent errors in management any more than a fire alarm system can prevent a fire; but, like the alarm, it can warn of the danger early enough for the situation to be brought under control. In addition, like the centralized board of a far-flung alarm system, it can indicate the specific point where trouble is brewing.

Since net profits are the difference between income and expense, it is important not only to increase revenues, but also to decrease the cost of securing and doing business. Management research may make valuable contributions to increased sales through various forms of market analysis. However, its contribution to net profit by eliminating nonproductive expense, though not as apparent on the surface, may be of far greater value. This phase of management research is not always appreciated, frequently because not enough emphasis is given to the fact that each dollar of sales usually results in only a few pennies of net profit. It should also be remembered that sales (unless they represent some form of subscription) are individual transactions, and additional effort as well as expense will have to be incurred to secure future sales to the same firm or individual. On the other hand, savings made possible by eliminating unnecessary waste usually have a much more lasting effect. It is conservative to say that an improvement in methods can be expected to have a life of five years, after which time, presumably, changes in basic procedures or other circumstances may intervene.

Thus, even for a concern with as high a ratio of profit as 10 per cent of sales, each annual $1,000 saving made possible by an improvement in operations (assuming the improvement will be effective for five years) corresponds to the increase in net profits brought by a $50,000 sale. Where substantial numbers of people are employed, the net-profit gains to be brought about by elimination of waste in effort may be well beyond what management suspects. For example, if only a small unit of 30 employees is involved, with an average pay of $1,500 a year, or a total of $45,000, an improvement in procedures resulting in a 20 per cent decrease of work would represent a saving of $9,000 a year. This, again assuming the high net profit of 10 per cent of sales, would be the equivalent of obtaining a $450,000 order.

CHAPTER III

THE PLACE OF MANAGEMENT RESEARCH IN THE ORGANIZATION STRUCTURE

In arriving at policies, in making plans, in setting up standards or objectives, the head of an organization obviously does not have the time to gather the facts necessary for his decisions. However, the delegation of this preliminary function is extremely important.

If the research into basic data is transferred through several stages to persons "down the line," the ultimate objective of the request may become more and more blurred in each stage of transmittal. The person who finally will gather the facts may be completely unaware of the real purpose behind his task, and of the important considerations involved. As a result, he may perform a purely mechanical job, not volunteering vital information which he may possess or stumble upon, for which no one thought of asking. At the same time, data compiled in this manner may be distorted by the mental approach and interpretation of the department to which the person down the line belongs. He may think of the security of his own job. He will want to present facts in the light most favorable to him and to his division. This does not necessarily mean that he will supply false information; but his selection of data to be supplied, if there is a choice, will be colored and therefore misleading.

A person who does not know the purpose of the information he is asked to supply will very often fail to include some essential facts. Or, if the request for information has not been stated quite as clearly as it should have been, he may give entirely wrong data. It should be remembered that employees often do not have the courage to question the soundness of an order, not realizing that a broad-gauged executive is usually the first to admit an error and reverse his own decision as soon as additional facts indicate that he has previously arrived at a wrong conclusion.

From the foregoing it is obvious that fact finding is an extremely important function, if the facts are to serve as an adequate basis for major decisions. They must be not only gathered intelligently, but also interpreted and presented in the light of company-wide objectives rather than departmental problems. Similarly, all indices routinely informing the head of the organization should give due weight to all departments or divisions involved.

For these reasons, the most effective way of setting up the management research work of an organization is to center it in a separate department, directly responsible to the principal executive—in fact, to make it in a sense his personal management staff.

Of course, where we use the word "department" in this connection, we do not necessarily imply numerous personnel. Staff functions are frequently very effectively carried out by one man, or by a limited group, and the detailed work involving operating departments is done by borrowing the necessary help. An outstanding example of this is the work done by Mr. Justice Byrnes as head of the Office of War Mobilization. When he assumed this important post, topping all other government agencies, he announced that he would not set up an elaborate personnel, a policy to which he adhered in all of his effective accomplishments in coordination and control.

When a management research department is set up, the heads of the various departments must be made to understand that its work will be carried out with complete impartiality, and that all contacts with rank and file and others in the operating departments will be made through proper executive and supervisory channels. Furthermore, operating executives should be permitted to call for the type of assistance which the research department is qualified to render, with the understanding that such requests do not carry the implication that their departments have been operating inefficiently.

When management research is conducted as a staff function under the direct authority of the chief executive, it will receive wholehearted cooperation throughout the organization. Setting it up as a separate agency within the company will give it the chance to become an independent, hard-hitting force, capable of acting as a coordinating, directing intelligence with respect to old as well as new problems. Its greatest power will be its complete objectivity.

The Use of Consultants in Management Research

Generally speaking, a management research staff executive should be available to the organization on a permanent basis, and consultants should be used only on special problems. If a company does not as yet have a management research unit, and if it feels that a survey by a consultant may be a logical way to begin, it is important that, at the time of such a survey, a permanent staff—even if it consists only of one key man—be assigned to work closely with the outside organization, so as to become familiar with the procedures and techniques involved. In the process, much valuable information can be accumulated as to possible special studies to be undertaken in the future.

The main argument in favor of developing a permanent staff is that in doing so a company makes the improvement of its products and procedures a continuing process. A successful organization, to remain successful, cannot stop the process of improvement any more than a person can stop eating or breathing. Progress is the life of an organization, and life itself is a continuous replacement of outworn cells in the organism.

Nevertheless, even a corporation with an extensive management research organization of its own will run up against problems for which the answers can be obtained more economically and more effectively by engaging outside services. For example, when a firm is looking for a special type of direct-mail campaign or needs a special market analysis or consumer opinion survey, an outside organization will probably produce the quickest and surest results. In other words, if the management research executive tries to become too expert in too many fields, he may detract from his usefulness rather than augment it.

Frequently the problem is similar to that of finding the end or ends in a tangle of string. Once an end is found, the further straightening of the confusion becomes simple. A specific problem, attacked in a concentrated way with the aid of a specialist, will often solve itself quickly once the specialist has turned up a few ends or "leads" for analysis. The management research executive performs an important service by acting as liaison between outside consultants and his own management.

The basic question is one of sound judgment—when to look for outside help, and when to tackle the whole job from the inside. This will be discussed further in Chap. VI.

CHAPTER IV

MANAGEMENT CONTROLS

The Superfortress has, to the uninitiated, a seemingly bewildering number and variety of instruments on its control panel. Yet there is not a single one which is not essential to the safety and best performance of the ship.

The reason for these instruments is obvious. A glance at them takes only a fraction of a second, and yet it immediately tells the man at the controls whether everything is functioning as it should or whether some corrective action is needed.

Of course, the urgency of action in a business enterprise cannot compare with that in the operation of an airplane, but the principle is the same; visual controls, which show at a glance the performance of one or another important unit of the whole, or indicate external forces with which the whole must contend, materially increase the speed with which a problem is recognized and simplify the task of directing appropriate action. It is the responsibility of management research to provide an "instrument board" for management—the indices and controls upon which decisions can be based. The top executive of an organization, since he cannot as a rule have had firsthand experience with more than a few branches of operation, must increasingly rely on statistical measures.

These measures, as implied in our brief reference to long-term planning and specific objectives, have to do with two kinds of variables—those largely representing influences from without, such as general economic conditions, and population shifts; and those primarily representing internal conditions, such as unit costs, output, and labor turnover.

Broadly speaking, the first type is not subject to management control but is subject to research and appraisal for purposes of policy decisions. The second type can be controlled, and the degree of control indicates the effectiveness of planning. Of course, many situations—labor turnover, for example—are the result of both external and internal influences whose relative importance varies with time.

External Influences

Today some large corporations have economists on their staffs whose responsibility it is to watch basic trends in their industry and in the economy generally, to develop forecasts, and otherwise to aid in policy formulation. However, it is more generally true that most managements, especially in smaller companies, are not nearly so well informed on basic economic questions as they are on internal conditions or on goings-on in the trade. Here again, the versatility and flexibility of the management research executive come into play. Where specialized staff departments exist, his responsibility is mainly one of familiarizing himself with their techniques, so that he can aid in interpreting their findings and coordinating them with management thinking in operating departments. Where they do not exist—and that is more likely to be the case with respect to economic research and scientific sales research than with respect to, say, budgetary control or manufacturing methods departments—it is his duty to fill the gap as best he can with whatever resources are available.

What measures are useful and readily obtainable? Recent emphasis on postwar planning by the Committee for Economic Development, the U.S. Chamber of Commerce, and others has given wide publicity to the usefulness of figures on national income and national gross product in obtaining a better perspective on an individual company's past performance and future possibilities. Perhaps the currently most widely quoted single publication on this subject is "Markets after the War," by S. Morris Livingston of the U.S. Bureau of Foreign and Domestic Commerce. Research by the bureau has now established comprehensive statistical series for a wide variety of industries back to 1929. When plotted against figures for national income, these statistics furnish guideposts for individual companies within those industries.

Current figures, in terms of dollars and of unadjusted and seasonally adjusted index numbers, are given for national income payments as well as for a wide variety of measures of retail trade, employment, industrial production, prices, and the like, in the monthly *Survey of Current Business* published by the Bureau of Foreign and Domestic Commerce of the U.S. Department of Commerce. This publication brings together statistics gathered by private sources and trade associations, as well as by governmental agencies. Of course, there is always a time lag in statistics published in this way. For specific series, advance releases are often obtainable, and these can also be supplemented by forecasts or estimates from trade associations, trade publications, and special industry research groups. Since national income figures are such useful guides for every kind of business, it may prove helpful to subscribe to some service which gives estimates for six months or more beyond latest published figures.

A point to emphasize here is that the management research executive should not try to set himself up as a short-term forecaster who will "call the turn" for commodity or stock speculation. His service to management is to keep it informed on basic trends. If one rules out speculation as an objective, his knowledge of long-term underlying movements—even if he is more conservative on turns than those who make a business of forecasting—will be what is needed for most management decisions on such matters as where and when to build a new plant, the advisability of making heavy advertising appropriations, and the feasibility of launching a new product.

Publications by the Federal Reserve Board and by the various Federal Reserve banks, all of which publish monthly reviews of conditions in their territories, are extremely helpful. The *Federal Reserve Bulletin*, for example, has department-store figures in more detail than those republished in *Survey of Current Business*, and the departmental breakdowns of these data should be a valuable running indicator to most manufacturers of consumer goods. Its index of production is also, of course, widely quoted.

Figures on cost of living and other matters affecting labor—regional and national figures on strikes, accident rates, labor turnover, and the like—are obtainable in the *Monthly Labor Review* published by the U.S. Department of Labor.

There has been some questioning by labor and political groups as to whether the government's cost-of-living index has been realistic in recent war years; some, indeed, have charged that it is developed with a conscious bias. However, careful investigations by the American Statistical Association have emphatically vindicated the statistical procedures of the Department of Labor. Indeed, it can definitely be stated that all the governmental statistical sources here alluded to enjoy the highest reputation for professional, objective treatment.

Enjoying an authority equal to that of governmental agencies are the industrial, financial, and labor data published by the National Industrial Conference Board in New York, and it will pay every management research executive to be thoroughly familiar with NICB resources. In addition, private research organizations are available which furnish comprehensive statistics on the current movement of specific brands and types of merchandise through certain distribution channels.

It may be said that, by and large, managements do not seem to be aware of the highly useful statistical information available at no cost or at only nominal cost from the type of source mentioned.

"Bench Marks"

Often an important function of the management research executive is to be the "trend spotter" for his company. If this is the case, he should have at his fingertips basic economic and trade data and be prepared to interpret them to interested groups in his company.

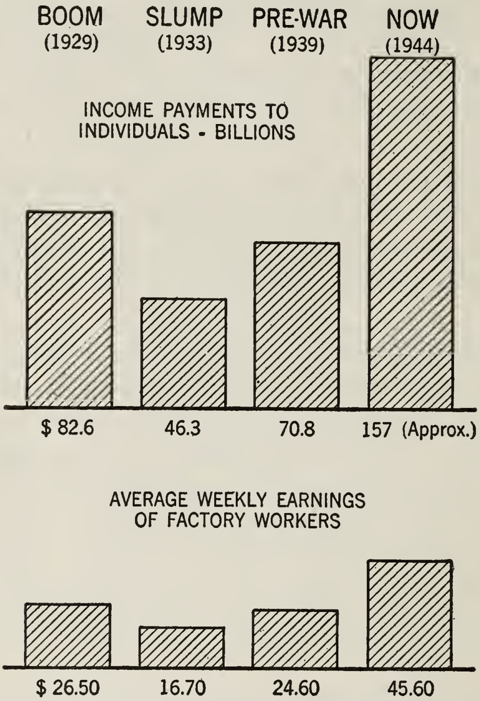

FIG. 1a.—"Bench marks." (*Sources*: *top, U.S. Department of Commerce; bottom, U.S. Department of Labor.*)

Recent upheavals make it advisable to set up certain "bench marks" against which to measure current levels. Since the boom of 1929 is still recent enough to be recalled from firsthand experience by most persons in responsible positions, it will be useful to set up as convenient bench marks the following: "Boom," 1929; "Slump," 1933; "Prewar," 1939; and "Duration." The latter can be 1943 or 1944, or both, with monthly figures for the year current.

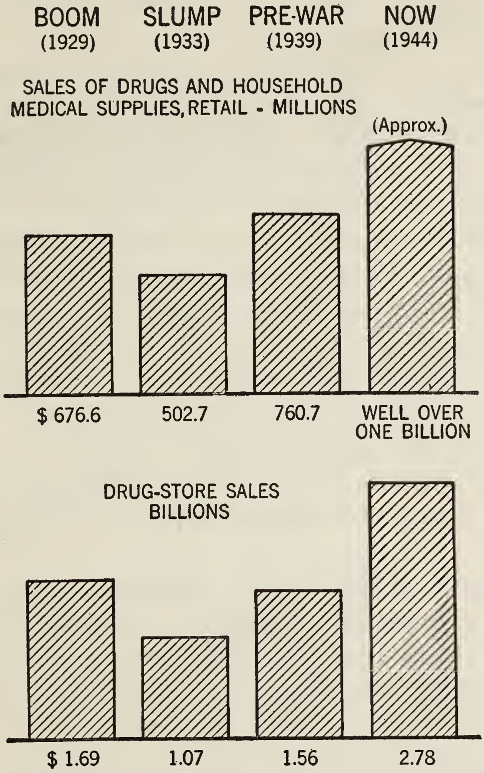

FIG. 1*b*.—"Bench marks." (*Sources: top, "Markets after the War"; bottom, U.S. Dept. of Commerce.*)

"Postwar" will, of course, be the next logical bench-mark designation.

In presenting data at general salesmen conventions or to anyone not accustomed to dealing with statistical literature, it is usually best to avoid index figures and detailed graphs and charts, and to present the material in "high-spot" form. The four bar diagrams in Figs. 1*a* and 1*b* are examples.

The research executive should decide for himself the type of basic information likely to prove useful to his company and then arrange to keep a running series of indices. When such a series is once set up, it can be brought up to date once a month, without much trouble, from the sources mentioned in the text.

Figure 2 on page 39 shows a typical leaf from a management research executive's notebook, prepared for a manufacturing company interested in drugstore, department-store, and grocery-store distribution of its products. Figures shown are obtainable from *Survey of Current Business*, *Federal Reserve Bulletin*, and from the various Federal Reserve banks. Data on sheets not reproduced here cover toilet-article and drug sales in department stores of all the Federal Reserve Districts, the Federal Reserve index of production, and rural sales of general merchandise.

By watching the various trends, the research executive can sometimes make his own estimate of the trend for the whole of the current year. In presenting such figures, he should be careful to qualify them as his own current estimates.

With respect to this specific example, it was sometimes found best to translate all indices to the base 1939 = 100 before discussing the data with company executives in special presentations. The year 1939, as the latest nonwar year and still vividly recent, was found to be a far more acceptable reference point for some company audiences than the 1935–1939 average. Indices for sales of various company divisions were also given, on the same base, facilitating comparisons.

Bench marks set up from economic data can prove helpful in many types of management discussions. A point to remember is that an over-all, "whither-are-we-going" picture is usually very interesting to salesmen brought in for a company sales convention. They are close to the trees, and a glimpse of the forest as a whole has definite training value. At the same time, it behooves the manage-

	BOOM	SLUMP	PRE- WAR	DURATION — (Unless otherwise specified, indices are seasonally adjusted, 1935–1939 = 100)													
	1929	1933	1939	1943	JAN. '44	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL 1944
TOTAL INCOM Index	E PAY 122.9	MENT 68.9	S TO 105.4	INDIV 211.7	IDUA 226.4	LS 231.1	230.2	229.4	231.0	232.6	232.2	233.7	232.7	235.5	237.9	219.0	
Billions of dollars	82.6	46.3	70.8	142.3	12.43	12.11	12.87	12.49	12.30	13.50	12.89	12.61	13.68	13.70	13.31		E157
RETAIL DRUG Index	STORE 117.2	SAL 74	ES 108.4	179.6	186.7	181.6	191.9	183.9	185.1	187.1	184.9	185.5	191.0	215.3	217.5		
Billions of dollars	1.69	1.07	1.56	2.59	0.213	0.203	0.224	0.212	0.224	0.220	0.225	0.227	0.231	0.255	0.248		
DRUG CHAIN Index	SALES 85.6	73.2	109.8	179.4	178.0	177.1	191.2	182.1	182.7	184.7	186.7	186.5	187.6	190.1	190.2		
ALL RETAIL Index	STORE 125.0	S SA 63.4	LES 108.7	163.6	177.2	176.4	179.5	168.4	171.7	171.2	177.0	178.0	174.5	180.1	187.2		
GROCERY CHA Index	IN SA 107.6	LES 83.9	107.6	165.2	175.1	167.8	169.8	169.3	178.7	182.1	182.6	183.4	179.6	186.5	179.4		
DEPARTMENT Index	STORE 117	SAL 73	ES 106	168	175	175	185	172	181^{P}	175	192	187	183	194	210	194	
(month Index, ba 139 = 1	ly fi sis 00	gure	s for 100	1944 158.5	are +6	per -6	cent +18	age +2	chan +18	ges +5	from +9	sam +17	e mon +14	th p +11	revi	ous	year) 159.5^{P}
TOILET ARTI	CLES	AND	DRUG	SALES	IN	DEPA +21	RTME +78	NT S -13	TORE +2	S -4	-4	+11					
TOILET ARTI —BOSTO Index, ba 1939 =	CLES N sis 100	AND	DRUG 100	SALES 155.8	IN +6	DEPT +25	. ST +80	ORES -14	BY -3	FED. -5	RES -6	. DI +9	STRIC +8	TS— +9	DIST +10	RICT +13	ONE
AS ABOVE, D	ISTRI	CT T	WO—N 100	EW YO 119.8	RK -10	+11	+62	-21	-4	-6	-8	+10	+6	+1	+6	+8	
AS ABOVE, D	ISTRI	CT T	HREE- 100	-PHIL 172.5	ADEL +9	PHIA 0	+64	-17	+3	-10	-7	+3	+14	+4	+12	+12	

ment research executive to welcome invitations to be present at such gatherings, since reactions from men in the field place his own over-all picture in sharper focus. He should also, of course, make it a point to keep alert to what is going on by attending meetings of management associations and trade groups.

Internal Controls

It is difficult to imagine a business enterprise larger than a one-man shop operating without some sort of budgetary control. It may not often be the responsibility of the management research executive as here conceived to set up such a control for his company, but it is definitely his responsibility to make the figures "come to life."

Budgeting, like any form of planning, accomplishes its purpose in proportion to the use made of it. In this case, the problem may be to see that the right persons, all the way down to foremen or office supervisors, actually get to see and understand the comparison of performance with estimates. Often this may mean translating accounting "variances" into terms readily usable by executives or by supervisors on specific operations, since one purpose of budgets is to train people to operate efficiently and to take steps to correct adverse performance in time.

Study of current costs, budgets, and other monthly financial statements may be just as important for special analyses for top-management discussion as it is for "translation" down the line. It frequently happens that these records were set up for special accounting purposes but require careful analyses of just how certain reserves are handled, changed appropriations and other adjustments made, idle equipment time charged, and the like, before realistic comparisons can be drawn or trends determined. For example, in making detailed studies of two products in a company's line, it may be found that, on the basis of standard costs, the cost of production is practically the same for each. However, if equipment for one of the products is being used at only 30 per cent capacity, the actual costs may vary greatly.

Similarly, the way in which advertising appropriations are budgeted and costs actually charged over the various months of the year may require careful scrutiny before meaningful comparisons can be made. One important fact that the management research specialist must learn early in his career is that information which is perfectly valid and logical from an accounting point of view may be somewhat misleading when considered from an engineering or sales-forecasting point of view.

All the company's financial and operating reports should be available to the management research man. He should make it part of his routine assignment to go over these carefully, and to ask questions wherever expenses seem out of line or other variances seem out of the ordinary. When sales exceed the plan, it is only natural that sales expense will increase. When any form of production increases, it is to be expected that certain expenses in connection with production also increase. However, until an extraordinary bulge takes place, incremental increases in expenses should be smaller than incremental increases in sales or production. Of course, in some situations marginal increase in business is of such importance that extraordinary effort is justified in attaining it. An example is the pioneering expense that may be involved in launching a new product or in effecting a change in consumer habits.

Analysis by means of a "scatter diagram" will often bring out relationships and departures from norm which might otherwise not be so readily apparent. Figure 3 shows how the sales for recent years of a certain product were analyzed by quarters, to see whether increases in volume were bringing corresponding decreases in selling expense (figured exclusive of advertising charges). As shown, the two most recent quarters plotted—the fourth for 1943 and the first for 1944—show selling expenses quite definitely out of line, calling for more detailed investigation into possible reasons and corrective measures. Without the quantitative picture, an ordinary statement would have shown 4–43 practically equal, percentage-wise, to 3–43; 1–44 might have appeared high, but not over three times as high as it should be for its volume of sales.

One type of budgeting that was forced upon practically all companies by wartime restrictions is that of sales budgeting, in the sense of carefully allocating limited merchandise among specified classes of customers, and in using available materials for higher priced items in the line. This involves a kind of thinking, and a set of procedures, that are usually at variance with traditional methods, and may well call for a special management study. Here the management research man can play a highly important role in liaison between Sales and Production. After agreement by all concerned has been obtained as to the type and quantity of production, it is extremely important that the right kind of index or danger signal be set up, to indicate when the quota is in danger of being used up.

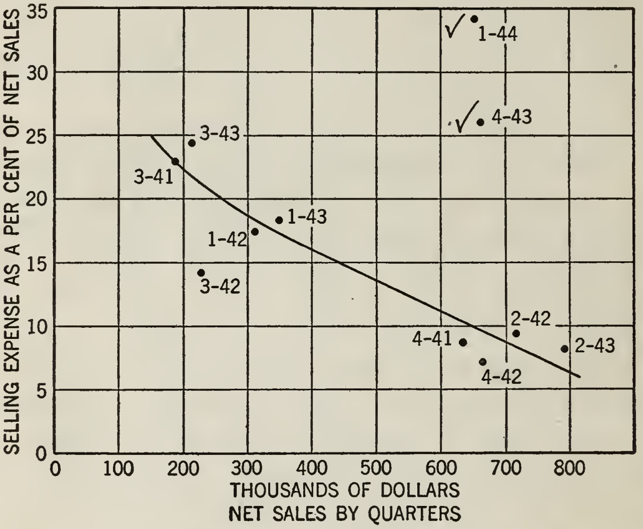

Fig. 3.—Scatter-diagram analysis.

Human nature will play a part in upsetting the carefully laid plans; sales departments are used to selling all they can and, instead of "soft-pedaling" a certain item, may get rid of a whole year's quota in three months. On the other hand, production planning departments are used to replenishing stocks when certain low points are reached, and may continue to do so, even in excess of previously set quotas. Often the answer may be in arranging for a tabulation or index that shows, at a glance, both production and sales against quotas, so that both types of danger points appear in the same place.

The importance of labor relations today may make it advisable to set up certain "personnel controls" for routine scrutiny by top management. Here again the underlying principle is that of "management by exception." The indices should be such as to give only the most essential comparisons, so that unnecessary detail will be avoided. At the same time, they should furnish prompt danger signals when basic personnel management is not functioning smoothly, so that the top executive can call upon the right subordinate executives to furnish whatever additional information or assurances are desired.

Three basic "vital statistics" should be of interest to top management in any type of business: (1) the total number of employees and their division between men and women; (2) the quit rate in labor turnover, since that is a definite indication of the satisfaction employees find in their job situations, and a sharp increase means lowered operating efficiency and possible labor trouble ahead; and (3) the accident frequency rate, since that is a marked indicator of efficient operation and supervision. Comparison with a company's own past performance will not tell the whole story. In periods when everybody is making forward strides, an improvement, however encouraging if looked upon separately, may be only a fraction of the improvement enjoyed in industry as a whole. In difficult times, a falling index may show up quite favorably when viewed against outside figures. Figure 4 shows how one arrangement of basic indices was set up for a company with a Northern and a Southern plant. In this case, dealings with the union at the Southern plant made it desirable to include cost-of-living figures, which fortunately were available for the city where the plant was located.

PERSONNEL CONTROLS

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
MANPO	WER—T	otal C	ompany	Emplo	yees						
5,556	5,406	5,225	4,722	4,829	5,161	5,099					
	—T	otal W	omen E	mploye	es						
1,308	1,243	1,181	1,106	1,258	1,515	1,520					
TURNO	VER—Q	uit Ra	te, 13	5 Manu	factur	ing In	dustri	es			
2.36	2.41	3.02	3.59	3.77	3.85	4.02					
	—Q	uit Ra	te, So	uthlan	ds Fac	tory					
2.63	3.48	8.31	9.35	10.67	14.8	24.84					
	—Q	uit Ra	te, No	rthlan	ds Fac	tory					
1.08	1.29	0.97	3.32	3.00	2.9	5.4					
SAFET	Y—Los	t-Time	Accid	ents.	Entire	Compa	ny				
92	69	64	70	66	78	63					
	—Fre	quency	, Repo	rted A	cciden	ts, So	uthlan	ds Fac	tory		
112.6	53.8	109.7	100.4	136.5	184.6	153.7					
	—Fre	quency	, Repo	rted A	cciden	ts, No	rthlan	ds Fac	tory		
115.9	128	82.8	108.6	105.6	138.9	88.6					
COST	OF LIV	ING—S	outhla	nds Ci	ty, 19	35–39	= 100				
114.9	116.1	118.4	120.2	120.9	120.2	121.6					
		—N	ationa	l, 193	5–39 =	100					
111.9	112.6	114.3	115.1	116.0	116.4	117.5					

Fig. 4.—Running indices for "personnel controls." (In original, running typed sentences were in red so that the whole page was easier on the eye.) This method of portrayal was found to be much more practical than charting. In the latter method, the multiplicity of lines on one chart made for confusion.

Of course, the company's personnel division should have much more detailed information. Accident statistics on a frequency and severity basis—"reported" as well as lost-time accidents—should be available by departments and divisions. Detailed information on separations should also be available for the various units of the business—if possible, by means of an "exit interview," so that the real reason for quits can be established. It is much more likely that personnel controls of this sort will be lacking in a company than that comparable accounting or budgetary lacks will be met. Hence, a management research man may have to help set up procedures and controls for this type of measurement. Here it will pay him to "circulate" at management gatherings and to keep abreast of what companies well known for their personnel relations are doing, so that he can persuade his own management to adopt similar practices.

With respect to indices in general, it is worth reiterating that, to be comparable with the previous year's figures, the current figures must either be compiled on an identical basis or be properly adjusted. Imagine, for example, that in figures relating to total production a unit which has since been discontinued has been included in earlier figures. The index for the current year must be adjusted by eliminating this effect as accurately as possible. Moreover, when figures refer to "work completed," it is essential that they show just what is meant by such a heading—whether it means work ready to be turned over for the next operation, or actually delivered; whether any estimated production is included; as of what hour or date the period under consideration ends; and whether that ending point is the same in data being compared.

When ratios of several items are being used together, it must be kept in mind that the statistical treatment may occasionally give rise to seeming paradoxes. This usually occurs where components of greatly differing magnitudes are involved. Consider, for example, a report submitted on the subject of rejects due to errors. Round figures will be used for simplicity. On the basis of the first measurement, Division A, with an average production of 1,000 units, has a rejection of 0.6 per cent, while Division B, with average production of 100 units, has a rejection rate of 5 per cent. For the second equivalent period, production of Division A has been reduced to 500 units, and rejection rate has been reduced to 0.4 per cent. In Division B, production has been increased to 200 units, and the rejection rate has been reduced to 4 per cent. In table form, these data would appear as follows:

Table I

Division	Period 1			Period 2		
	Production	Rejection	Rejection rate, per cent	Production	Rejection	Rejection rate, per cent
A	1,000	6	0.6	500	2	0.4
B	100	5	5.0	200	8	4.0
Totals	1,100	11	1.0	700	10	1.4

In other words, while the rejection rate for each of the divisions separately has improved, the rate of rejections for the operations of the divisions combined has become *higher* by 40 per cent. People dealing with statistical data must watch for such apparent inconsistencies, for every now and then they make an unexpected, disconcerting appearance, and may lead the unwary to incorrect conclusions.

The degree of detail in which indices should be applied depends upon a company's individual problems. However, it is obvious that the responsible top executive should have the least possible number—the ones that flash the most important danger points. If necessary, his assistants can supply him with more detailed information. Chapter VII discusses the application of standards to specific operations, which usually results in detailed indices, needed by the departmental manager in watching the efficiency of work for which he is responsible. Out of these detailed standards the top-management indices can be built.

The next question is, "At what intervals is it necessary to take readings and issue indices?" Obviously, to be of practical value the information should come at sufficiently short intervals to permit prompt action. However, if an emergency of a certain kind is extremely remote, and there are, moreover, indirect ways in which its appearance may be heralded, it would be wasteful to have certain indices in connection with it computed at excessively short intervals. For example, the total salaries and wages of an entire organization fluctuate comparatively slowly. Therefore, where the amount of work completed and the employee time needed for the production is kept on record, computation of average cost may be made at longer intervals. Average production, per employee week, day, or hour, would in itself indicate the trend of unit cost.

The shorter the interval for "taking a reading," the greater should be the promptness with which the final figures for the elapsed period are made available. For example, if a record of production is taken at a daily interval, the complete information should be before the executive in charge of the function in the forenoon of the following day. Otherwise, the information will probably be stale, and action which might otherwise be logical would be too late to be effective. The same would be true if the manometer on a boiler were to show the steam pressure an hour after the pressure has actually been reached. The boiler could well explode before the manometer would show that a danger point has been reached.

Since the purpose of progress reports is to show changes as they occur, normally the executive should have the data with which the comparison is made—last year's figures and this year's planned figures, week by week or month by month—so that at a glance he can see the performance for the elapsed time and what is expected for the remainder of the period under consideration.

"Danger Signals"

A point to keep in mind at all times is to look for the simplest index when setting up a "danger-signal" control. This will usually result if the whole matter is discussed thoroughly with the operating executives and supervisors involved. They are most familiar with the details of the work, and once they have a clear picture of just what kind of top-management or home-office signal is desired, they will usually be able to suggest a simpler attack than might occur to the research man looking at the problem statistically.

An example is a danger-signal control set up in connection with a comprehensive production and sales budgeting plan adopted by a manufacturing company when governmental restrictions on glass and other items made closer control necessary. After deciding, for each of the multitude of items and sizes, what a reasonable sales quota for the year would be, the production quota was determined by subtracting from these quotas the finished goods and work-in-process at the beginning of the year. The problem was, how best to "flag" those items which, during the course of the year, were selling much faster than the quotas had allowed for. Top management had to be notified promptly, so that a decision could be made immediately (in sufficient time for the manufacturing department to act on ordering batches, securing closures, etc.) as to whether an item would be allowed to become "out" or whether additional containers from the limited supply should be allocated for an increased quota. Considerations of the profit in that item as compared with others—retailer good will, consumer franchise, etc.—were involved.

One solution proposed was to have the sales records show up the danger signal; records of shipments of every item could be given cumulatively as the year progressed, with a percentage of the whole year's quota represented by shipments to date. However, because of complications arising out of sizes of batches for the various items, and the fact that warehouse and other stock supplies were needed at all times in addition to actual shipments to customers, it was soon found that the most effective place to catch fast-moving items was in the actual production records.

Then a complication arose; to be statistically meaningful, a seasonal pattern would have to be set up for each item. It might be normal, for example, that at the end of six months, an item be sold to the extent of only 25 per cent of its quota, with the bulk of sales at the end of the year.

Discussion with production men finally evolved a very simple formula for the whole problem. Instead of the complicated statistical analysis, it was decided merely to "flag" every item, as soon as the next batch order brought production to at least 75 per cent of the production quota. In this way, the Production Department would always have 25 per cent of its quota to "turn around in" while a decision on the questioned item was being reached. The "danger-signal report" consisted of the following information: item and description; production quota; amount produced as of date; per cent of quota produced; sales quota (greater than production quota, as a rule, because of beginning-year finished goods and work in process); estimated shipments to date; per cent left or available for sale in balance of year. On the basis of these data, the Sales Manager could quickly hand down a decision. Obvious? Perhaps, but it is surprising how frequently the simplest solution is not at all obvious and can only be arrived at by being "talked out."

A word should be said here regarding indices which deal with facts which in themselves may be reflecting data subject to considerable fluctuations, but where the average of, say, four or five consecutive weeks takes care of the fluctuations. In such cases, if a weekly index is desired, it may be preferable to use a moving average, representing an average figure for the last four or five weeks.

When a summary table is used to indicate the performance of a unit, a division, or the entire organization, it is often helpful to have indices presented in the order of sequence of operations, beginning, say, with orders received and ending with orders delivered or shipped. It is important to remember that indices of back lists, or incompleted work remaining on hand as of a given time, if shown in consecutive order for different units and compared with the usual flow of work, may indicate a method of eliminating abnormal bottlenecks. In watching the flow of work, it is possible to foresee the special measures which are called for by extreme fluctuations.

Visual Control Boards and Charts

Visual indicators are often extremely helpful in keeping track of complex operations, and the management research executive should be alert for opportunities to use them. As a rule, they are more applicable to departmental and divisional control than to "top management" control.

A simple yet ingenious device was developed for a group of manufacturing operations. A variety of orders were being accepted, but there was difficulty in estimating when certain manufacturing functions could be completed. This, of course, affected the time of probable completion of orders in their entirety. A number of machines were involved, some of which were interchangeable in the sense that the same manufacturing process could be accomplished on each of them although some could do it faster and more economically than others.

The man who had to solve this problem first arranged for a definite daily rate of completion of jobs on different machines, and then lined up the incompleted work for each of these machines. To visualize the total load for the machines, strips of board with descriptions of the work to be done were cut out for each job. The length of the strip represented, to scale, the number of work-hours required for completion. The list of the machines was arranged in a

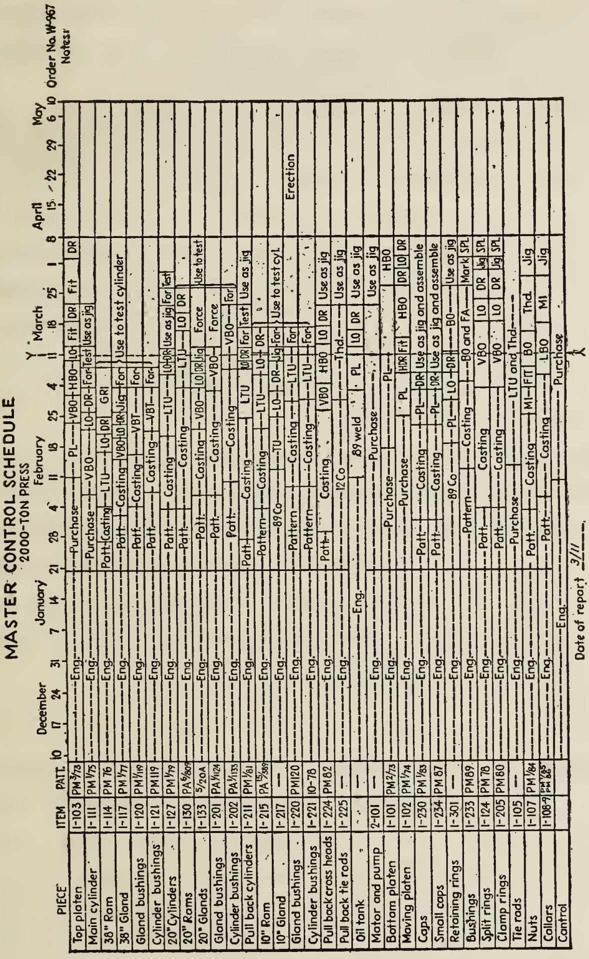

FIG. 5.—Typical Gantt chart. Time schedules for finishing operations listed are indicated by vertical lines. Progress is recorded by horizontal lines for each item. Date for which a checkup is made can be indicated by a vertical line, as shown by the line at March 11, above. (From the chapter by Bethel, Planning and Scheduling, in "The Foreman's Handbook," ed. Heyel, McGraw-Hill, 1943.) Charts like these should not be reserved for factory use; they are valuable wherever scheduling is involved.

vertical column and against each, horizontally, was affixed a "pocket"—a sort of ledge, where the cardboard strips representing work could be inserted, somewhat as stamps are put in stamp collectors' wallets.

After all the jobs, as represented by cardboard strips, were inserted in the horizontal line of the machine on which they were to be done, the total outstanding amount of work for each machine was easy to determine. Thus the problem of determining the probable day of completion of a job and the decisions as to reassignment of jobs to different machines were considerably simplified.

A Gantt chart, developed for production control, can be varied to fit many kinds of scheduling and back-list needs, either as a chart or as a large progress-control board. A typical Gantt chart is shown in Fig. 5. One thing, of course, that must be kept in mind when the development of large visual-control panels is contemplated is the matter of keeping them up to date. In the first flush of enthusiasm, a fine, impressive panel may be designed, only to be discarded later because it is found that the full time of one person is required to keep it up.

Incidentally, the management research executive should not lose sight of the fact that he might profitably develop some adaptation of the Gantt chart for the control of his *own* assignments. This becomes almost imperative when assignments come in thick and fast—as they will, if his work is at all productive. An example of a control chart for management research is given in Chap. X.

Sampled Data

In the course of management studies it is frequently necessary to secure statistical information which is not available on a regular basis. Usually, since there is no accepted index on hand, it is also necessary to decide how big a sample or samples should be taken for the special purpose at hand. The whole problem of sampling, of course, is a highly technical one, and judgment will have to be exercised as to whether professional statistical advice is needed, as it might be, for example, in the case of an inspection for quality in identical items or parts being produced at the rate of hundreds or thousands per hour.

In most management problems, however, conscientious, common-sense reflection upon this detail will make it possible to avoid serious pitfalls. How uniform is the work in question? How regular are the fluctuations caused by advertising, season of the year, day of the week, economic conditions, etc.? Before deciding on the size of the sample, it might be well to have records taken and fluctuations studied. This in itself may be indicative of some of the problems which are present in the situation and which may have been overlooked when preliminary discussions were had.

A person who wishes to have an analysis of soil will follow definite instructions, knowing that if he trusted to luck, he might have an analysis of some topsoil which had been dumped in the corner of his garden and which is in no way representative of the general run of the soil on his property. Yet, in business, one will meet occasions when as much as half the total source of significant information will be overlooked in taking a sample, simply because the sample is taken at the wrong time or at the wrong point in the flow of work.

Permanent Records

It will sometimes be found that an organization's permanent records are kept in such a way as to make valid comparisons impossible, because there is no way of telling how the records were originally established or what changes of procedure with respect to them were made from time to time. Relying upon memory is obviously dangerous, not only because memory itself is not reliable, but because the person who developed the records or was the first to keep them will not be with the company indefinitely. There should be a definite statement in writing, precisely indicating the manner in which the records are to be kept, as of what day (and, in some cases, even what hour) the count should be taken, and what exceptions there are to the general rule.

As a rule, it will also be found that far too many figures are kept—figures which may have been of interest to some official on a specific occasion, but which from that time on were compiled as a part of regular procedure. It may even be that the information compiled at the time was not the kind that could be used. When records requiring more than a nominal amount of time are being considered, an estimate of the time involved should be made. The comparison of the cost of this time with the value of the data may well lead to revoking the request for the information.

In establishing and reviewing permanent records, it should be ascertained exhaustively just what purpose the records are to serve, who is to use the information, whether there is another source of similar or equally informative data, and whether the information is presented in a way which most readily brings out the desired relationships. This last point is as important as the compilation of the data in the first place, for people who are not accustomed to interpreting statistical information are likely to be impatient with such data. They may not use them, or may slur over them, simply because they are not presented in an easily readable and digestible form.

The custody of basic data should be clearly established. Without it, information which has been reported upon drifts into the wrong place in the files, and too often it happens that the very work sheets which are subject to later question are the ones that turn out to be missing.

CHAPTER V

SYSTEMATIC SOLUTION OF MANAGEMENT PROBLEMS

The president of a large corporation paid this tribute to the operating vice-president in charge of the company's largest mill: "He is a man who plans his work, and then works his plan." To be able to set up a plan that will work, and then to see that the plan *is* worked, is the test of the management research executive as that title is used in this book.

Of course, the organization of a management study and the action following upon it will differ in detail, depending upon the scope and urgency of the problem involved. However, the systematic solution of any management problem calls for a basic five-step procedure. The steps are appropriate no matter what the type of problem—whether it is one calling for top-management decisions on basic policy, or, more narrowly, one involving changes in procedure in a single department. Moreover, the sequence of the steps is important. While results are frequently obtained by taking the third step without sufficient thinking through of the first and second, or by working upon the third and fourth simultaneously, optimum results call for an orderly progression from the first through the fifth. Finally, all of the steps are important; optimum results again demand that the same emphasis be placed upon the last as upon the first.

The five steps in this procedure are

1. Determine the objective and state the problem
2. Make a breakdown of the important studies or surveys involved
3. Devise the formula for attaining the objective
4. Organize for action
5. Arrange for effective follow-through

Objectives

We have already indicated that management research as here conceived is a necessary tool in the implementation of every one of these steps. Some of the indices we have mentioned will in themselves often point up a problem of which management may not have been explicitly aware, setting up an objective for a management study almost by "spontaneous combustion." This may happen, for example, as a result of comparisons of the sales of a particular product with the national income index over a period of years. Sales may apparently have been increasing satisfactorily, and yet such a comparison may show a marked departure from the trend of income for the preceding few years, whereas the correlation may have been extremely close for a long period. This may indicate that for some reason the product is losing its standing in its market. Again, if its relative standing, as shown by consumer tests and other analyses, is apparently being maintained, it may indicate a radical falling-off in public acceptance for that *type* of product. Similarly, analysis of monthly financial figures may bring to light unusual bulges in certain types of expenses, calling at least for some sort of explanation, if not for a detailed study.

Frequently, of course, the "objective," that is, the problem itself, will be handed to management research as a specific assignment, rather than created. In any event, *reducing objectives to writing* should always be the first step. Someone has said that "an idea does not exist unless it can be put into writing." It is often surprising how many false steps can be avoided, and how much real, constructive fundamental thinking will be accomplished, merely by a clear-cut written statement of the problem.

Setting down an objective in writing has the advantage, first, of breaking a generalized objective down into truly separate problems, and second, of pointing to a priority of problems. Definition often leads to a change in point of view as to the relative importance of matters under discussion.[1]

If an assignment has been given to the research executive to work out himself, rather than to bring up for discussion at meetings, it will be well for him to do a careful job of formulating the problem in his own words, stating the objective or objectives concisely. This written statement should then be checked with the other executives who will later have a voice in the matter, so that there is a clear understanding all around of just what is being undertaken, and why.

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[1] "I walked into a meeting yesterday," writes Richard Weil, Jr., in "The Art of Practical Thinking," "where a group of executives were discussing one of the time-honored problems of operation in a large store: *how can the salespeople be brought to sell more than they do?* The immediate point being debated was whether, in paying salesclerks' commissions on sales, the store should use one uniform system throughout, or should have several different systems. . . . I sat down and listened for a few minutes, and then asked that the problem be stated. They stated it as I have indicated, one uniform system versus several different systems.

"When they stopped the debate and stated the problem, certain things immediately became apparent. . . . This particular problem, when stated in the above terms, had practically no significance. . . . There is no intrinsic advantage in a store's having either a uniform or a varied system of incentive payments. . . .

"I asked them if they didn't think they would make quicker progress by asking themselves the more general question of what relationship might exist between all methods of salesclerk compensation and the objective of better selling. This was by way of establishing a sort of subpriority of problems. We went on to develop . . . a fairly complete priority. It ran something like this: better selling involves a number of variable factors, such as methods of display, physical arrangements of articles to be sold, and so forth. The particular problem under consideration had to do with assuming all variables, other than salespeople, as being fixed, and taking the salespeople as one entire problem. This was subdivided into the picking of salespeople as a separate subproblem. . . .

"Under picking of best possible salespeople, subquestions were tabulated having to do with the kind of qualities, experience, motivation, special skills, et cetera, which should be looked for, and their relative importance. Under the question of incentives, questions of money incentives were thrown into one group, security into another, promotional possibilities and recognition of individual achievement into still another. Finally a reasonably complete hierarchy of problems was articulated, and useful solutions were not slow in coming. All of this was initially made possible by insisting that the problem be stated."

Breakdown

Management problems that go beyond the improvement or reorganization of internal operations usually involve such intangible or hard-to-pin-down elements as estimates of trends in an industry, opinions as to what consumers want, guesses as to future technological developments, and estimates of changes in buying habits. These usually involve outside surveys and studies.

Making a breakdown of the studies and surveys involved is actually a thinking through to see what basic factors should really influence the decision most, and then a development of the appropriate data so that a logical attack upon the problem can be made. At first blush this may seem a laboring of the obvious, yet it induces a clearing away of underbrush in thinking about the problem that can avoid many false starts and much waste of time and energy.

For example, if a company is considering entering an established market with a new product of its own, the basic factors may well be arrayed as follows:

1. Total volume of market
2. Standing and entrenchment of competition
3. Special problems involved in getting into the field: relationships to the company's present products in manufacturing and distribution
4. Investment required and end-profit possibilities

Each one of these may well call for one or more detailed studies, the organization of which may in itself be a considerable project, attacked as a problem of its own, following steps 1, 3, 4, and 5 of the basic procedure outlined at the start of this chapter. First, however, it is advisable to consider them together in a preliminary appraisal, as suggested in Chap. VI on making external management studies.

There the concept is developed of making "preliminary-preliminary" studies—research of a general nature to determine whether a project is really feasible from an over-all point of view.

Where clarification of an objective or problem calls for a special study, there should, if possible, be some understanding at the start concerning the amount of time and money that will be devoted to it. Of course, in some cases the decision may well be that no special limit will be established but that the development of the study itself is to serve as a guide.

Formula

As to "devising the formula for attaining the objective," no general recipe can, of course, be given here—no magic elixir or touchstone. Once the essential data are at hand, together with a full awareness of the limitations of the data, devising the formula becomes a matter of interpretation and cerebration, suiting the solution to individual circumstances. However, despite the differences presented by particular cases, it may be helpful to consider a few general pointers here.

In the first place, it is in order to reexamine the phrase, "the one best way," made popular by the Taylor-Gilbreth school of scientific management practitioners. Just what is "the one best way"? In manufacturing operations—where, of course, the motion- and time-study engineers have made their greatest contributions—it can perhaps be defined quite explicitly, usually in terms of the maximum output meeting quality standards, in the minimum time, or with the minimum expenditure of energy or money.

In more general problems of management and organization, however, the same degree of explicitness can rarely be achieved. What may be the one best way under one set of conditions, or in one type of organization, may not at all be the way to go about something under another set of conditions, or with another group of people. Moreover, what may at first glance seem to be the best way, on the strength of available information and logical analysis, may have to be significantly tempered in the light of actual working conditions. Most important, it may turn out that the actual formula is not as serious a problem as the human-relations aspects of putting it to work, so that any one of several ways of doing something may fit the mechanics of the problem satisfactorily, but only one particular "best way" is really best in view of the personalities or customs involved.

A number of situations might be cited as examples of this principle. A logical way of distributing a product or line may have to be excluded from consideration because of antagonisms that may be created among important factors in the trade. Setting up a danger-signal control of a certain type may not work because the executive in charge of an important department may not be "figure-minded" and would not react constructively to a logical way of catching dangerous situations at the start. Traditional purchasing practices, where it is customary to accept fairly large overages, may upset a control devised by one not familiar with that procedure. A key man in an organization may simply be the kind of person who doesn't like to read memoranda, and doesn't answer most of those sent. (True, such eccentricities should not, perhaps, be permitted, but it is surprising how often they exist, especially where "genius is at work.") Or one executive may be a stickler for organizational channels, necessitating meticulous routings and notifications, while another may want to cut corners wherever possible, and get things done by direct action.

In addition to such human-relations factors, other difficulties may militate against adoption of what may theoretically be the best way. Thus, the logical method of controlling certain operations may require statistics or other data which are not available under ordinary circumstances, and to secure them may occasion too great an upset in the routine of some other part of the organization. A series of compromises may then have to be made in order not to call for burdensome clerical detail, even though a considerable degree of statistical precision is lost. Indeed, it is often found, after formulating a plan, that the degree of accuracy of underlying statistics necessitates deviating considerably from the theoretically best solution to a problem. If card inventory figures are used, for example, with a physical count only at relatively infrequent intervals, provisions will probably have to be made to allow for inaccuracies.

Therefore, a basic precaution to follow at all times is to "iron out the kinks" ahead of time, insofar as is humanly possible. Too many plans look good on paper but will not work out in practice because this simple rule has not been followed. There is no easy formula for accomplishing this; it is a matter of rolling up the sleeves and getting down to the level where the plan must operate. One thing that can almost always be done is to talk the plan over, while it still *is* only a plan, with a number of persons who are representative of those who will have to make it work. Usually they are so close to the job that they will be able, right at the start, to point out "bugs" which would have been seriously embarrassing later on.

In this connection, the attitude of the research man is important. It is a fundamental quirk in human nature always to be ready with reasons why something won't work. At a later time, when he is sure of his plan and is at the stage of "selling" it to those who must authorize or implement it, the research man must be prepared to meet such objections and to persuade action despite them.

However, at the "kink-getting" stage of his investigation, he should carefully refrain from any defensive attitude and should, in fact, encourage the "why-it-won't-work" response.

Down-the-line discussion of practical details is, then, a first "must" in devising a formula for attaining an objective. There is absolutely nothing that takes the place of intimate knowledge of the routines and systems affected by a proposed new procedure.

In addition to discussing a proposed plan at the working level, it is always advisable, where possible, to arrange for a preliminary tryout. While this is frequently impossible, it is also true that simple tryouts are often overlooked, even though a simulation of actual working conditions is entirely feasible. Ideas in writing and sketches on drawing boards are never as vivid and fruitful as real tryouts, or—lacking them—working models.

In plant relayouts, for example, it is accepted practice to make schematic cutouts, to scale, of equipment and fixtures to be arranged, and to move them about on templates. In recent months, we have been hearing a lot about "mock-ups"—models, often life size, of proposed new products for development after the war. The model and mock-up idea can often be applied to procedures as well as to tangible objects. Thus, in sales research, it is quite customary to have sales tests in certain areas, at certain prices, before a new or changed product is released for general sale; and in the motion picture industry, "sneak previews" of expensive feature productions are an accepted technique. This kind of testing can be applied to internal management procedures as well, by arranging for perhaps a month's tryout, in a small department, of a procedure suggested for universal application, while the customary way of doing things is continued elsewhere. Again, a set of records can be set up as a "practice" routine, while the old way of doing the job is continued, merely to see whether there is anything impracticable in the new proposal.

Pointers regarding this experimental approach in internal studies are discussed in Chap. VII.

Action

"Organizing for action," like devising the formula, is a tailor-made job for every problem, but here, too, a basic pattern of attack can be followed.

Once the formula has been double-checked for kinks, the first order of business is to set up a timetable for action. Plans of action without realistic timetables are almost invariably doomed either to death through neglect or to ineffectiveness because of "too-little-too-late" results. In setting up the timetable, the research man must carefully check all important items on the agenda of the major departments involved. It would be fruitless, for example, to set up a plan calling for the serious participation of the sales manager and his key assistants three months hence, only to find later that, during the two or three weeks when their closest cooperation is needed, they will be head over heels in sales meetings for which the sales manager has called in his men from all parts of the country. Similarly fatal would be a schedule calling for participation by certain accounting personnel at a time when they are completely absorbed in annual tax problems or in physical inventory or in getting out the company's annual report.

Emphasis should be put upon the adjective "realistic" used above. One of the most common errors in setting up a timetable is to take an overoptimistic view as to how much will be accomplished in a given time.[1] Performance, especially where new procedures are involved, rarely goes according to plan. Time should be allowed for errors, troubles, and false starts. Moreover, the interest that has been aroused in an idea will not keep up at high pitch when it comes down to actually doing the work.

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[1] In the best-selling novel, "A Bell for Adano," John Hersey has Major Joppolo, charged with administering the affairs of the occupied Italian town of Adano, read the following mimeographed instructions from AMG: "Instructions to Civilian Affairs Officer—*First Day:* Enter the city with the first column. Co-operate with the Commander in Chief in placing guards and seizing records. Place all food warehouses, enemy food dumps, wholesale food concerns, and other major food stocks under guard. Secure an estimate from local food distributors of the number of days of food supplies which are on hand or available. Make a report through channels on food situation in your area. See that the following establishments are placed

Along with the timetable should go an understanding of who is responsible for what. A timetable without such explicit fixing of responsibilities is like an airplane with one wing. In short, it won't work!

A human-relations point to remember is that a complete understanding by everyone concerned about this matter of responsibilities is an extremely difficult result to accomplish. Mere telling, and mere noting of the point in memoranda, are not enough, especially if the matter is something outside of an executive's or employee's ordinary duties. Nothing is more disconcerting to a person responsible for keeping the wheels moving on a given project than to find out, after a period of weeks or even months, that he has been living in a fool's paradise—that a certain executive who ostensibly was taking care of one phase of the over-all job has done nothing at all, because he mistakenly thought it was the responsibility of someone else. The precaution to follow is to "circulate" assiduously while the job is in progress, and by circumspect conversation to keep the pot boiling on the proper burners. Here judgment and tact are extremely important. Often any impression that the research executive is putting on pressure will be met by instant resentment and, usually, continued procrastination.

With a formula that promises results, and a good idea of what a workable timetable should be, the next step is to

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under guard or protected: foundries, machine shops, electrical works, chemical plants, flour mills, breweries, cement plants, refrigerating plants, warehouses, olive oil refineries, tunny oil mills, soap manufacturing plants, and any other important establishments. Locate and make available to port authorities all known local pilots. . . . " Major Joppolo rightly concluded that that was a program for the first 6 months rather than the first day and tore up his instructions. He felt much better then.

prepare the ground thoroughly. Where a project was initiated by the top executive of the company, the research man should request that this executive pass the word along to the operating heads involved, so that when he approaches them the matter will have the stamp of authority. The research man's role will then be that of an alter ego, speaking for the top executive and not for himself.

As soon as possible, a meeting or series of meetings of all key people involved should be held. Unlike meetings of a consultative character (already alluded to, and discussed in later chapters with respect to specific studies), the tone of such meetings should be informative, rather than solicitive of further suggestions, although, of course, no suggestion should be turned down at the meeting. The point is that at this stage, the research man should be in a good position to defend his plan as "airtight" and lay the groundwork for actual operation rather than further planning. Here again the idea of working through others must be kept in mind. It is more effective to have one of the key operating executives involved call the meeting in his office, than to have the research man himself call it. It need hardly be added that preparation for such a meeting is extremely important. Little things, like having sufficient samples of new forms proposed, will save time and win respect.

Follow-through

Follow-through will have been greatly facilitated by the establishment of a timetable and the fixing of responsibilities. It is then up to the research man to decide what sort of periodic statistical and other reports are needed to keep him and others informed of progress, or to control an operation once it has been set up. Obviously, the clerical detail with respect to these should be kept to a minimum. Careful study should be given to see where approximations might serve just as useful a purpose as more precise figures.

A periodic checkup should, of course, be made to see that everyone involved is carrying on as originally agreed upon. No matter how thoroughly the kinks were ironed out, such checkups will usually show that certain refinements and improvements in procedure can be made. Suggestions on this score should always be welcomed and, if practical, inaugurated as soon as possible, even though it involves admitting that the person who developed the plan is fallible.

One excellent aid to follow-through, where new internal routines are involved, is the development of fairly detailed check sheets to be used by supervisors or the employees themselves, so that no important points are overlooked. Even though such lists may seem to repeat elementary points, they are helpful in maintaining uniform standards. Often, too, they will be timetables for specific operations, telling when certain things are to be done, as well as what is to be done. Moreover, they help to indicate the point at which to resume the work if it was for any reason interrupted before completion.

Check sheets and similar job aids should be developed with the consultation of those who are to use them, so that they will be in the most practical form. If this precaution is not followed, they will simply gather dust in a desk or file.

An example of how such cooperation results in really workable check sheets is furnished by one plant, where an expanded program of training machine adjusters was established. The now widely used techniques of the government's "Training-Within-Industry" program were followed. A series of sessions with key men was held on how to teach a job by breaking it down into its important steps, with "key points" for the steps. Then round-table sessions with these key men were held, so that actual job-breakdowns for all of the operations involved could be developed.

The men were asked how these breakdowns could be reproduced so as to be most helpful. Unanimously they wanted something that was easy to read, in a booklet which they could slip into their pockets. Despite difficulties occasioned by wartime shortages, a sufficient number of small, loose-leaf booklets was obtained, and a printer was found who would set up the bothersome composition (bothersome, because of the rulings and other handwork involved) and run off the job at not too great a cost. Figure 6 *a* and *b* shows two pages from one of the booklets, in actual size. The numbered items are families of jobs, with a detailed job breakdown for each one of the lettered items. The important thing about this example is not the breakdowns themselves, but the fact that they were worked up cooperatively, and that their format was just what the people on the job wanted.

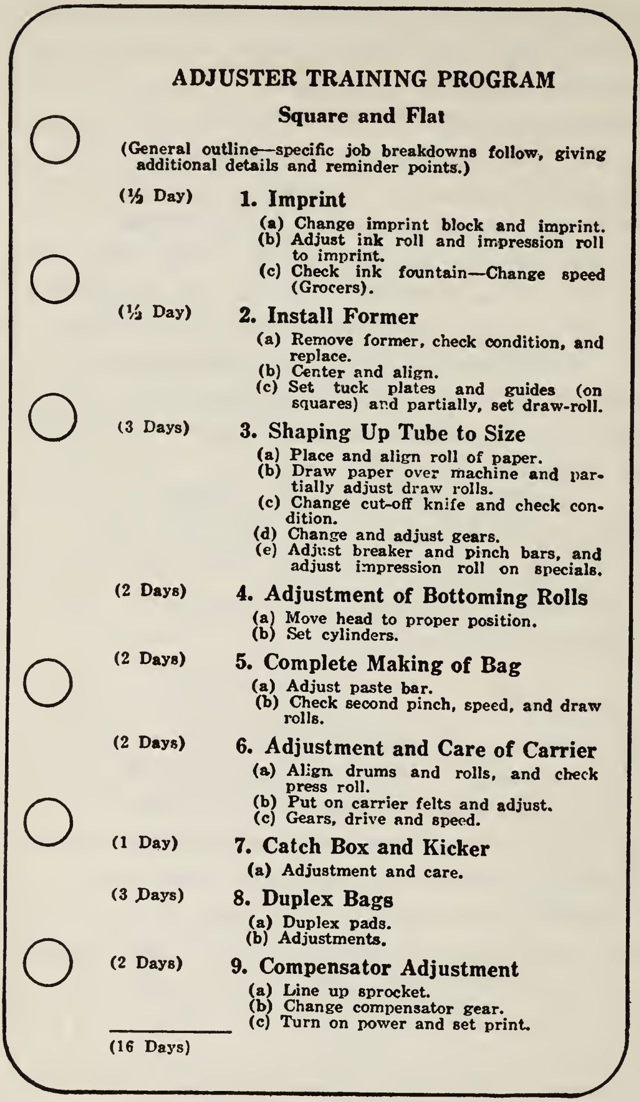
More detailed pointers with respect to conducting "external" and "internal" management studies are given in succeeding chapters. In the meantime, the chart on page 73 brings together the elements of the five-step procedure here discussed.

Written Reports

Since memory is unreliable, all facts of importance should be recorded as soon as they are developed, together with a notation as to their source. As soon as a study, or an important unit of a study, is completed, a report should be prepared covering all significant information. A good report should have precise statements as to (1) problem or objective of the study, (2) data which were found to have an important bearing on the problem, and the methods used in determining them, and (3) conclusions, including action taken or recommendations.

It is always desirable to give magnitudes in actual numbers or percentages. Adjectives such as "few," "some," and "many" should be avoided. Where facts refer to data determined on the basis of a sample, the magnitude of the sample should be given.

Since changes may result in an improvement with



ADJUSTER TRAINING PROGRAM

Square and Flat

(General outline—specific job breakdowns follow, giving additional details and reminder points.)

(½ Day) **1. Imprint**
  (a) Change imprint block and imprint.
  (b) Adjust ink roll and impression roll to imprint.
  (c) Check ink fountain—Change speed (Grocers).

(½ Day) **2. Install Former**
  (a) Remove former, check condition, and replace.
  (b) Center and align.
  (c) Set tuck plates and guides (on squares) and partially, set draw-roll.

(3 Days) **3. Shaping Up Tube to Size**
  (a) Place and align roll of paper.
  (b) Draw paper over machine and partially adjust draw rolls.
  (c) Change cut-off knife and check condition.
  (d) Change and adjust gears.
  (e) Adjust breaker and pinch bars, and adjust impression roll on specials.

(2 Days) **4. Adjustment of Bottoming Rolls**
  (a) Move head to proper position.
  (b) Set cylinders.

(2 Days) **5. Complete Making of Bag**
  (a) Adjust paste bar.
  (b) Check second pinch, speed, and draw rolls.

(2 Days) **6. Adjustment and Care of Carrier**
  (a) Align drums and rolls, and check press roll.
  (b) Put on carrier felts and adjust.
  (c) Gears, drive and speed.

(1 Day) **7. Catch Box and Kicker**
  (a) Adjustment and care.

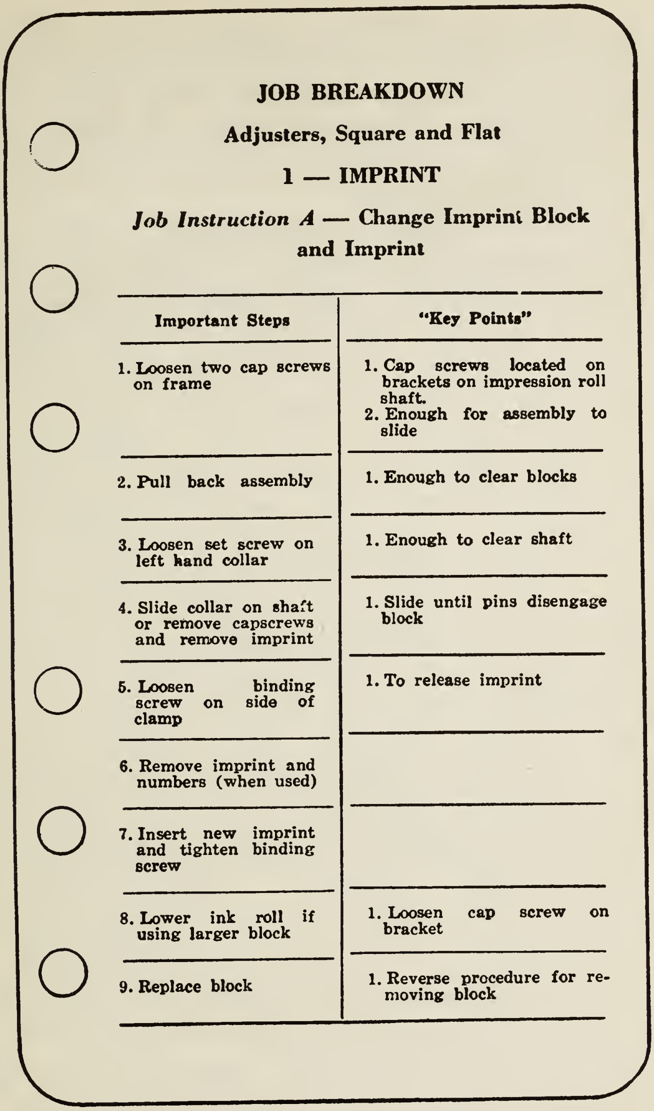
(3 Days) **8. Duplex Bags**
  (a) Duplex pads.
  (b) Adjustments.

(2 Days) **9. Compensator Adjustment**
  (a) Line up sprocket.
  (b) Change compensator gear.
  (c) Turn on power and set print.

(16 Days)

a

Fig. 6.—Loose-leaf job-training sheets (actual size) developed in round-table individual teaching job listed by letters under the nine "families" of jobs shown The timetable given in the left-hand margin of *a* shows the estimated time green employees—they were upgraded from men already on related work.



JOB BREAKDOWN

Adjusters, Square and Flat

1 — IMPRINT

***Job Instruction A* — Change Imprint Block and Imprint**

Important Steps	"Key Points"
1. Loosen two cap screws on frame	1. Cap screws located on brackets on impression roll shaft. 2. Enough for assembly to slide
2. Pull back assembly	1. Enough to clear blocks
3. Loosen set screw on left hand collar	1. Enough to clear shaft
4. Slide collar on shaft or remove capscrews and remove imprint	1. Slide until pins disengage block
5. Loosen binding screw on side of clamp	1. To release imprint
6. Remove imprint and numbers (when used)	
7. Insert new imprint and tighten binding screw	
8. Lower ink roll if using larger block	1. Loosen cap screw on bracket
9. Replace block	1. Reverse procedure for removing block

b

sessions with the men who were to use them. A sheet was provided for each in *a*. Many sheets contained special "reminder points" in the lower margin. required for this particular job-training program. Men to be taught were not respect to one set of problems, but may augment difficulties with respect to others, it is essential that, in any matter of importance, both the pro and the con be given. There should be no doubt, either at the time the report is first read or later, as to whether adverse factors were overlooked or deliberately not included.

When a report is prepared for discussion at a conference where a decision is to be made, it is usually advisable to give whatever alternative methods might be used in solving the problem, with an explanation of the advantages and disadvantages of each. However, if the research man has thought through his assignment, he should not have to present too many alternatives. Too many choices make the decision more difficult; he should be expected to limit his recommendations to the few most promising approaches.

The body of the report should be as concise as clarity permits. Supporting data should be appended as exhibits. If, because of the nature of the subject matter, the report must be long, it is advisable to make a summary, boiling down to one page the essential facts about each of the three parts—problem, findings, and recommendations.

Perhaps the most important point of all to remember about a report is that, before it is submitted, those who had an important part in the work should be given an opportunity to read at least the portion concerning them, so that they can offer suggestions. In this way they will feel that their participation has been recognized, and they will be more likely to support the recommendations. Of course, there will be exceptions—people who will not go along with any reasonable recommendation, and who will question the validity of any data assembled by someone else. However, even in these cases the discussion of the proposed draft of the report will be helpful.

The Art of Practical Thinking

The vice-president of a large company had this to say about applicants coming to him for a job after graduation from high school or college: "If only they would come to me with evidence that they have the right *mental approach* to working for us, I would snap them up before a competitor got them! We can train them in our work. I'm interested in more than the courses they had in school; I want to meet some young people who would come to me and say, 'Here, briefly, is the kind of person I am, and here is the mental equipment, in the way of formalized education, that I have. I should like to get on your pay roll and have a chance to think about the kind of problems that come up in a business like yours. I don't know anything about your kind of business yet, *but I am willing to think hard about it!*'" Many concerns are deeply aware of the need for better thinking. Indeed, the company which manufactures the most complicated machines of their kind, International Business Machines, calls its widely read house organ *Think.*

In this book we repeatedly emphasize that management research is an attitude of mind, a scientific approach to problems, as well as the acts of gathering and interpreting data and actually solving problems. All inventions, all improvements, all advancement are the fruit of reasoning, of systematic thought. True, many a contribution to mankind has had its origin in a flash of intuition or genius, but the actual translation of an idea into something beautiful or useful (or both) always demands the application of systematic thought as a precursor to effective action. This chapter would therefore not be complete if we did not say a few words about the art of practical thinking per se.

The speed with which a person is able to grasp a situation and arrive at a conclusion as to best action depends upon the speed with which he is able to reduce the problem to its essential basic elements, eliminating inconsequential or irrelevant details. Logical thinking, resulting from a deliberate training of thought processes, is necessary. Formal education is helpful mostly as a preparatory training of mind and because it leads to a more or less codified knowledge of sources of required information.

What is the most fruitful process for better thinking? There should be no doubt that the first step, as already emphasized, is deciding on the sequence of importance of problems. Just as two bodies cannot occupy the same space at the same time, so no one can really think about more than one problem at one time.

The actual form which reasoning takes differs with different people. As an illustration, to get the result of multiplying a number by 98, some do the actual multiplication, while others multiply by 100 and deduct twice the number. Some have more greatly developed the knack of rapid analysis and the selection of mental "short cuts." Logical reasoning is improved by consistent effort to think in an organized way. As a result, a person can acquire the habit of better thinking, just as any form of practice increases dexterity.

There are sound rules governing the art of thinking, just as there are in any art. Those who wish to pursue this subject will find much of interest and enjoyment in "The Art of Practical Thinking" by Richard Weil, Jr. (Simon and Schuster, New York, 1940). Mr. Weil is a successful business executive and draws his examples from the business world. He has written a lucid, useful book on a subject which is rarely touched in business literature.

Better thinking comes as a result of enjoying thinking; of appreciating examples of fine thinking, in the same way that a good picture, glorious music, or any other form of art may be appreciated; and of consciously endeavoring to improve one's capacity in this respect.

THE SYSTEMATIC SOLUTION OF MANAGEMENT PROBLEMS

In all steps—get the facts . . . face the facts . . . interpret the facts . . . get opinions . . . place opinions in proper perspective . . .

I. Determine the Objective and State the Problem

"Remember that an idea does not exist unless it can be put into writing."
State the problem in the broadest possible terms.
Get at the *cause* of the difficulty.
Clarify the sequence of attack.

II. Make a Breakdown of the Important Studies and Surveys Involved

Clear away the "underbrush."
See what sort of "preliminary-preliminary" data can be obtained.
Assign over-all responsibility and authority.

III. Devise the Formula

Double-check the "one best way."
Iron out the kinks ahead of time by
- *a.* Discussion at the operating level
- *b.* Preliminary try out (if possible)

IV. Organize for Action

Set up a *realistic* timetable.
Fix specific responsibilities and *authority.*
Prepare the ground by
- *a.* Word passed along by top authority
- *b.* Meetings for explanation

Provide check sheets, based on consultations at the operating level.

V. Arrange for Effective Follow-through

Determine upon periodic reports.
Make periodic checkups.

(NOTE: In solving a complex problem, the procedure will usually be to apply Steps I and II to the problem as a whole. Thereafter, all five steps are applicable to the subproblems into which the whole has been broken down.

FIG. 7.—Check points for a systematic attack upon any type of problem.

AN EXAMPLE OF "DISSECTING" A MANAGEMENT PROBLEM

By Serge P. Morosoff
Director of Commercial Research, Pacific Mills

While developing material for this book, the authors were fortunate in winning the interest of a number of fellow members of the Society for the Advancement of Management. The check points on page 73 *were presented for review and discussion at a meeting of the New York Chapter, and a small group agreed to meet, more or less regularly, for the purpose of dissecting actual problems encountered in their own companies. . . . The plan was to have some member state a problem occurring in his company, together with (if the problem was solved or in the process of solution) details on how the problem was tackled. The others in the group were then to analyze the reasoning involved in the light of the check points. . . . The following problem in itself is a minor one, in relation to the everyday problems of the multimillion-dollar corporation involved. However, it is a good example of what happens when a group undertakes a systematic analysis of this sort. . . . Mr. Morosoff kindly agreed to reproduce his problem and the subsequent discussion here, essentially as it was developed at the meeting. For competitive reasons, specific dollar figures and exact identification of the product involved have been deleted; however, their omission does not detract from the value of this account as a "case study." . . . Following Mr. Morosoff's presentation, the "dissection" by the group will be given.*

Our company's cotton textile operations twenty years ago were concentrated almost entirely on low-cost fabrics for mass market consumption. These goods were and still are sold to the cutting-up trade. As long as the supply was below the demand, the operations were profitable. But the First World War caused cotton textile output to double almost overnight through a simple expedient—the second shift. To counteract the effects of the adverse supply-demand relationship after the war, we turned to the production of mill-made fabrics. We built a wide-sheeting factory. We began to stress special industrial markets. Finally, we turned to specialties.

One of these specialties is a consumer product made of a special fabric. At present it is sold primarily through the larger department stores. Since the housewife buying this product can use it for the rest of her life, it has no repeat-business potential. Its sales volume has been low, and by itself it can support only a small advertising appropriation.

This, then, is the statement of our problem: "*How should we spend a small advertising appropriation for a specialty product?*" Our other operations involve an expenditure of about half a million dollars on advertising. However, we felt that that large amount of regular advertising should not overshadow the problems of this specialty product.

Our next step was to consider the information that should be gathered. An informal discussion brought out the opinions of our interested executives. It was concluded that, to find out what makes sales, we should consider our salesmen; our advertising; our pricing policy; our packaging; retailers' salespeople; retailers' advertising; retailers' standing in the community; retailers' method of displaying the merchandise.

When we considered the method of getting the necessary data, we decided that the detailed studies mentioned would take too long and cost too much. We therefore boiled down our study to the examination of certain sales and advertising statistics, and decided to find out the following three things:

1. The effect of national advertising upon sales
2. The effect of local advertising upon sales (*i.e.*, the newspaper advertising done by retail outlets, none of which was paid for by Pacific)
3. The distribution of our advertising effort

To find out if national advertising affects our sales, we divided all the cities in which we sold the specialty product into quartiles, based upon the circulation of the magazines in which the product was advertised. Thus, each group had the same number of cities, but the cities were ranked in order of the number of magazines containing our advertisements which were sold in each, on a per capita basis.

We reasoned that, if national advertising affected sales, the sales record of these four groups would vary in direct relation with magazine circulation. To measure the effectiveness of the sales effort, a sales quota or market potential was carefully established for each city, based on population and sales outlets. The actual number of gross sold in each city group was then divided by the quota, giving the "degree of penetration" for each group. Sales results are poor when the degree of penetration is low, and improve as this figure becomes higher.

TABLE II.—SALES COMPARED WITH NATIONAL ADVERTISING

Average per Capita Circulation of City Group, per M	Degree of Penetration, Per Cent
21.8	31
29.1	59
35.3	63
46.4	109

Table II shows the results of such an analysis. It indicates that the effectiveness of the sales effort improved as the per capita circulation increased. The "degree of penetration" column increased from 31 per cent for cities with a low per capita circulation to 109 per cent for cities with a high per capita circulation.

To find out if local advertising affects our sales, we had to turn to the advertising efforts of our retailers, since no local advertising is paid for by our company. The necessary data were obtained from a clipping service. All of these advertisements were analyzed, and our dealers were subdivided into four groups.

Group 1. Retailers who did not advertise
Group 2. Retailers whose advertisements were all placed within one thirty-day period
Group 3. Retailers who placed their advertisements within two thirty-day periods

Group 4. Retailers who placed their advertisements within three or more thirty-day periods

If it could be shown that the amount of purchases and volume of reorders was in proportion to the retailers' advertising effort, we reasoned that this would go far to demonstrate the worth of local advertising.

TABLE III.—RELATION OF LOCAL ADVERTISING TO REORDERS

Advertiser	Number sold per retailer	Per cent of retailers who reordered	Per cent of reorders to total gross sold
Group 1	1.6	22	42
Group 2	1.7	30	39
Group 3	2.5	50	47
Group 4	3.4	77	67
Average	1.8	28	44

Table III indicates that the number sold per retailer, per cent of retailers who placed reorders, and the per cent of reorders to total gross sold showed a marked improvement as the retailers' local advertising effort increased.

TABLE IV.—DEGREE OF PENETRATION COMPARED WITH ADVERTISING EFFORT

City-size group	Market potential, per cent	National magazine advertising, per cent	Difference between advertising and market potential, per cent	Degree of penetration, per cent	
				In cities with sales	In all cities
500,000 and over	47	37	−21	31	31
150,000 to 499,999	27	30	+11	55	48
80,000 to 149,000	12	14	+17	67	29
60,000 to 79,999	8	10	+25	89	30
40,000 to 59,999	6	9	+50	170	33
Total	100	100			

To measure the distribution of advertising, we subdivided the cities into convenient city-size groups and compared their market potentials with their share of the advertising effort. We also compared these findings with the "degree of penetration" for these city-size groups.

Table IV indicates that the most important key market, cities of over 500,000, was 21 per cent deficient in advertising; also that the effectiveness of sales in cities in which we sell the specialty is related to the city-size group deficiency or excess of advertising effort.

On the basis of the three tables, we concluded that

1. Advertising, both national and local, directly contributed to sales.
2. The present advertising effort is not equably distributed.
3. Sales territories are not equally developed. The cities of over 500,000 and those between 60,000 and 150,000 are least developed.

In addition to certain specific suggestions, we therefore recommended that

1. Recognition be given to the present unequal distribution of our advertising, and that the advertising effort be strengthened in large cities
2. Attention be given to the incomplete distribution shown up by the deficient "degree of penetration" in the last column of Table IV.

"Dissection"

The group as a whole wondered whether the problem had been stated properly. In general, it was contended that it should have been given in much broader terms. There was also a feeling that certain fundamentals were not given, which might well have altered the terms in which the problem was to be considered.

Mr. Morosoff pointed out that he had not given details of previous investigations that he and his company had made regarding broader phases of the problem, and that he had purposely presented the narrower terms in which it had eventually been formulated for specific action. However, the group decided that, for the purposes of "think-practice," it would discuss the problem as though it had just come up for the first time. In addition to adding to the value of the discussion, this procedure would, it was felt, give the speaker a chance to prepare a check list of what the group thought should have been considered, which he could later compare with the work that had already been done.

One of the group felt that such basic questions as the following had to be settled before constructive thinking could be done.

1. Is the specialty a by-product of a larger operation, or a small new product in itself?
2. Can sales be unlimited, or are there production or material supply limitations which circumscribe it? If unlimited, why was the appropriation set at the small figure given?
3. Is this material something that can be developed into a profitable business of its own, rather than being maintained as a member of a line? Does it perhaps have industrial or other uses which might lead to large-scale sales? He cited the case of a well-known radio station, originally operated as an advertising adjunct to a great department store. When a new president assumed direction of the corporation, he asked the question—"Just what can be made out of this station, not as an adjunct to a department store, *but as a business on its own?*" The result was an entirely new business—first, a powerful broadcasting station, and later, a powerful national network.

Others, while willing to accept the problem as the narrower one of developing the material as a specialty, nevertheless felt that the following questions had to be settled before the question of advertising could be tackled:

1. Is the drab color of the product necessitated by the chemical nature of the material? If not, why is that particular color being used?

2. Is the form in which it is now sold the best, most convenient way for the housewife to use the product? (A number of possible changes and additions were suggested by the group.)
3. Is the size of the product right?
4. What kind of substitutes are there, and how and at what prices are they sold?

Considerable discussion then followed as to whether some of the questions raised above—especially the first group, which are perhaps especially top-management policy questions—could fairly be asked in treating this problem. It was recognized that a problem is often decided in its basic terms by financial interests or by top management, and passed along for solution in specific terms. However, after many pros and cons, it was agreed that the fundamental *whys* and *whats* must always be asked, since otherwise no really intelligent attack can be made upon any problem. True, the management research man may be forced to accept a problem finally in narrow terms, but for his own background alone, even if he has no voice in the fundamental policy decision involved, he should always insist upon clarification of the fundamental issues. *The statement of the problem should always be in the broadest possible terms.*

It was finally agreed that the statement of the problem under discussion should be altered to, "*What product developments and sales plans will produce the most profit from this specialty fabric?*" It was agreed that if, because of unalterable top-management decision, the budget to achieve this end were still drastically limited, the statement could still be left in those terms, but that the appropriation should not necessarily be spent for advertising; it should in part be allocated to special promotional effort to do anything else that might prove feasible.

Critical attention was then given to some of the techniques reported upon in the study. Questions were raised about the means used to arrive at the market potentials, since the device of the "degree of penetration" rested upon their plausibility. The potentials used were based largely on population. Even accepting them—since it was indicated that they were more plausible than might appear at first glance, because underlying company sales data and other company information were not publicized in the paper—one member of the group raised doubts as to the validity of Table II. He observed that consumer advertising in magazines, totaling less than $50,000 annually, could be considered no more than token advertising, so that the high correlation shown in the table was, in his estimation, no evidence of a causal relationship. He felt that the most valuable result of magazine advertising might be to induce retailers to advertise locally.

The breakdown of the problem into important substudies was then tackled. It was strongly recommended that valuable "preliminary-preliminary" data be obtained by quick spot-contacts with buyers in various department stores. From them, ideas could be obtained as to ways in which such a product could be promoted, what might be involved in "PM's" (special commissions for clerks), whether cooperative advertising (with only small, token advertising in national magazines) might be the answer, how buyers react to direct mail directed to them—in short, a lot of valuable background information obtainable merely by "thinking out loud" with them about the product. Other suggestions were as follows:

Arrangement of a special test promotional setup in one or two department stores.

A consumer market study to determine: acceptability of the product against other means of performing its function; whether the name itself is really the best (persons not familiar with the product might think of the article as a piece of wearing apparel); the feasibility of other sizes and shapes (special bags, pockets, etc.); price; a different color (if technically possible); etc.

Further checks on the packaging, although the small group itself felt that the package was attractive.

Market survey among certain types of manufacturers to see whether a profitable sideline could be opened by having them supply the product with their own household articles, as an added feature.

The questions of devising the formula for the studies themselves, organizing for action, and follow-through were left for individual development, since the group could not be conversant with matters affecting them. They were, however, part of the recommendation by the group.

CHAPTER VI

POINTERS ON MAKING EXTERNAL MANAGEMENT STUDIES

For convenience in discussion, we make a distinction in this book between "external" and "internal" management studies. External studies are those which have to do with important factors outside of the company, while internal studies concern themselves with cost reduction, improvement of methods, correction of errors, and the like, in departments within the company.

Following are typical problems which call for external studies as here conceived:

What are the markets for new, improved, or current products?
What factors, beyond markets, must be considered in determining whether to bring out an entirely new product?
Do changes in buying habits call for a change in distribution channels?
Would it be profitable to acquire certain new companies which may be available?
Where should expanded factory operations be located? Should a new plant be built, or an existing one acquired?

While the above list is obviously not comprehensive, it is representative of problems requiring the collection and intelligent interpretation of data from outside sources. In handling, of course, the studies connected with them differ widely from internal studies and from one another. As compared with internal studies, they have the added difference that, as a rule, the management research executive will to a greater extent avail himself of outside consulting help—marketing survey organizations, technical research firms, and the like—and of services rendered by his company's advertising counsel.

Problems such as the ones mentioned usually involve a larger number of high executives than will those of an internal character. Going into a new kind of business or acquiring a new plant or making a fundamental change in an established product is no matter to be undertaken lightly, and ranking executives will be given a chance to have their say. Prejudices and preconceived notions will inevitably be encountered, and the management research man will have to be doubly careful in gathering, interpreting, and presenting data upon which a decision will be based.

Despite the almost infinite variety of external studies for which the management research man will either have full responsibility or perform a coordinating "keep-the-wheels-moving" function, a definite pattern of thinking is applicable generally, and will be considered here.

"Preliminary-preliminary"

After a complex problem has been broken into its component parts, as suggested in the preceding chapter, it will usually prove helpful to set up what, in one company, has been termed the "preliminary-preliminary" study. This phrase means just what the words imply. Every large-scale undertaking requires preliminary research. Often this will involve the expenditure of considerable time, effort, and company funds. It is therefore a wise precaution to ask, first, what essential facts can be ascertained at only modest cost to see whether it is really "in the cards" for the company to consider the project seriously and whether, accordingly, it should go on with the preliminary investigation. In short, it is a common-sense appraisal preliminary to the preliminary research.

In considering the feasibility of launching a new product, for example, there might be a temptation to engage in a fairly detailed market or laboratory study, whereas certain over-all conclusions, reached in a simpler way, may well show that the company should not go into that type of business at all.

Following are examples of items that can be included in a preliminary-preliminary study with respect to a new product:

Design

What are the prevailing professional or technical points of view with respect to products of this type? (A digest of pertinent articles in recent professional or technical publications can be prepared; scientific and technical authorities can be consulted.)

What "plus" features are conceivable in a product of this type? Is the company's laboratory or manufacturing background such as to put prestige behind a plus of this sort offered by it?

Markets

What published data exist (trade associations, directories, trade papers) which would give a rough idea of the current business being done?

What *potential* business might be possible? (*E.g.*, if the product is a logical replacement of existing devices, the top goal for the companies in the field would be the sum of the old market plus whatever business is now being done in the new. In some cases, a top figure would also be indicated by census figures of the number of persons of the sex- and age-group to whom the appeal is to be made, pared down by a reasonable "guesstimate" on percentage of use that could be looked for.)

Competition

Who are the principal companies now in the field? What share of the market are they apparently enjoying? (Exact figures, of course, are usually confidential. Shrewd estimates can be made by examining annual reports, published figures on advertising expenditures, spot checks in distribution channels, published market surveys, credit reports, and the like.)

What is the parent corporate control of key companies in the field? (Often the interests really behind a product are not generally known; when they are ascertained, an entirely new light may be thrown on the whole problem. A small company may not want to test its slings against a Goliath.)

Problems of Raw Materials

Is the principal material to be used a by-product of some large, unrelated operation (unrelated insofar as markets for the proposed product are concerned)? If so, would a company that is not in the first kind of business stand a chance against such a first company which, through a subsidiary, may have brought out a product of the type under consideration?

Is the principal raw material subject to violent price fluctuation?

What synthetic materials worth investigating have come to the fore?

Manufacturing Problems

Is a big plant investment involved, or is intricate equipment required to compete? (Here again, examination of financial statements and annual reports of companies in the field will be helpful. Suppliers of the type of equipment involved can also give valuable information.)

Will any of the present manufacturers produce a private brand? (This may enable a company to get into the business without a big plant investment at the start.)

Can a manufacturer in a similar but not in the particular field be secured as a manufacturing agent? (Raw materials suppliers can often give valuable leads on this score.)

Patent Problems

Does the company now dominant in the field have comprehensive basic patents? If so, are they approachable regarding licensing? (A comprehensive patent search is, actually, no longer in the preliminary-preliminary stage. However, a preliminary idea on the patent situation can be obtained before an airtight search is ordered. Actual or photostatic copies of important patents can be secured at negligible cost, for the research executive's guidance—but not for him to hazard an opinion in the province of the patent attorney.)

While the above example has to do with a new-product problem, the preliminary-preliminary attack is obviously suited to any external problem. With respect to the location of a new plant, for example, a basic first decision is to determine roughly what part of the country is best suited to the company's operations. A quick check could get the underlying concept straight—for example, whether the most important factor is transportation of raw materials or of finished goods, or climate, or labor supply. Let us say it is transportation of finished goods to mass markets, with practically 100 per cent distribution. In a preliminary-preliminary survey, the part of the country logically served by the existing plant can be marked off on a map, and the remainder of the country studied by summating the products of the populations of all major metropolitan areas and their distances to possible locations, with the optimum location (other factors roughly equal) being the one yielding the minimum sum of these products. A further refinement of this first rough approximation can be made by considering per capita income in various sections of the country. In one study of this sort, the country was divided into marketing areas, and a "center of gravity" determined for each. With these once established, it was a relatively simple matter to summate elements for every location considered, each element being the weight assigned to a particular marketing area, multiplied by the distance from its center of gravity to the location.

The individual items in every "preliminary-preliminary" study will be different. Determining them merits time

MOUTH WASH

Leading Brands	Per Cent Use by Brands										Per Cent Use by Yearly Income—1943			Per Cent Use by City Size—1943			
	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	Under $2,000	$2,000 –$3,000	Over $3,000	100,000 and over	2,500– 100,000	Under 2,500	Total
Listerine	60.0	58.0	60.0	58.5	63.3	64.9	66.7	63.8	66.8	68.0	75.0	67.4	63.6	63.6	70.1	75.8	68.0
Pepsodent	19.0	15.0	13.0	18.0	15.0	13.3	11.6	12.2	9.4	8.9	6.7	9.1	9.2	9.6	9.5	4.7	8.9
Lavoris	8.0	8.5	8.5	7.0	5.8	5.3	6.1	7.5	5.8	6.5	2.5	7.0	9.6	7.6	6.6	2.4	6.5
M. I. 31	1.0	1.0	2.0	2.0	2.0	1.4	1.8	1.8	2.0	2.0	1.1	2.1	2.5	1.2	2.0	4.3	2.0
Dr. Lyon's	....	....	....	....	....	....	....	....	....	1.8	1.4	2.4	1.6	2.5	0.9	1.9	1.8
Avon	....	....	....	....	....	....	....	1.8	2.7	1.7	2.1	1.8	1.6	2.0	1.4	1.9	1.7
Vince	....	....	....	....	....	....	....	....	....	1.0	0.7	1.2	0.8	1.0	1.4	0.0	1.0
Astring-o-sol	....	....	....	....	....	....	....	....	....	1.0	0.4	0.9	1.6	1.8	0.5	0.0	1.0
All others	12.0	17.5	16.5	14.5	13.9	15.1	13.8	12.9	13.3	9.1	10.1	8.1	9.5	10.7	7.6	9.0	9.1
Total, all brands	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Per cent naming brand	70.0	64.0	56.0	57.0	72.8	69.1	68.2	65.8	55.7	56.4	59.7	56.4	56.1	54.8	56.9	60.8	56.4
Per cent using	....	....	....	....	....	....	....	....	57.3	57.4	60.5	57.4	57.2	55.8	57.7	62.0	57.4

Leading Brands	Per Cent of All Purchases Made in 10c (or Less) Sizes										Place of Purchase—1943				
	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	Dept. store	Drug-store	5- and 10-cent store	Mis-cellane-ous	Total
Listerine	24.0	26.0	25.0	29.0	29.9	23.6	29.0	25.9	20.9	15.9	5.2	67.2	25.1	2.5	100.0
Pepsodent	19.0	23.0	18.0	19.0	17.4	15.4	12.3	15.8	13.8	13.3	3.2	71.0	23.7	2.1	100.0
Lavoris	7.0	7.0	10.0	6.0	5.8	4.6	4.3	5.3	0.0	0.0	4.7	95.3	0.0	0.0	100.0
M. I. 31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0
Dr. Lyon's	....	....	....	....	....	....	....	....	....	0.0	0.0	63.2	15.8	21.0	100.0
Avon	....	....	....	....	....	....	....	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0
Vince	....	....	....	....	....	....	....	....	....	0.0	0.0	100.0	0.0	0.0	100.0
Astring-o-sol	....	....	....	....	....	....	....	....	....	0.0	22.2	77.8	0.0	0.0	100.0
All others	....	....	....	....	....	....	....	....	....	14.1	11.6	57.9	16.8	13.7	100.0
Total, all brands	23.0	25.0	21.0	23.0	24.6	19.6	23.4	21.1	16.6	13.9	5.4	68.4	21.6	4.6	100.0

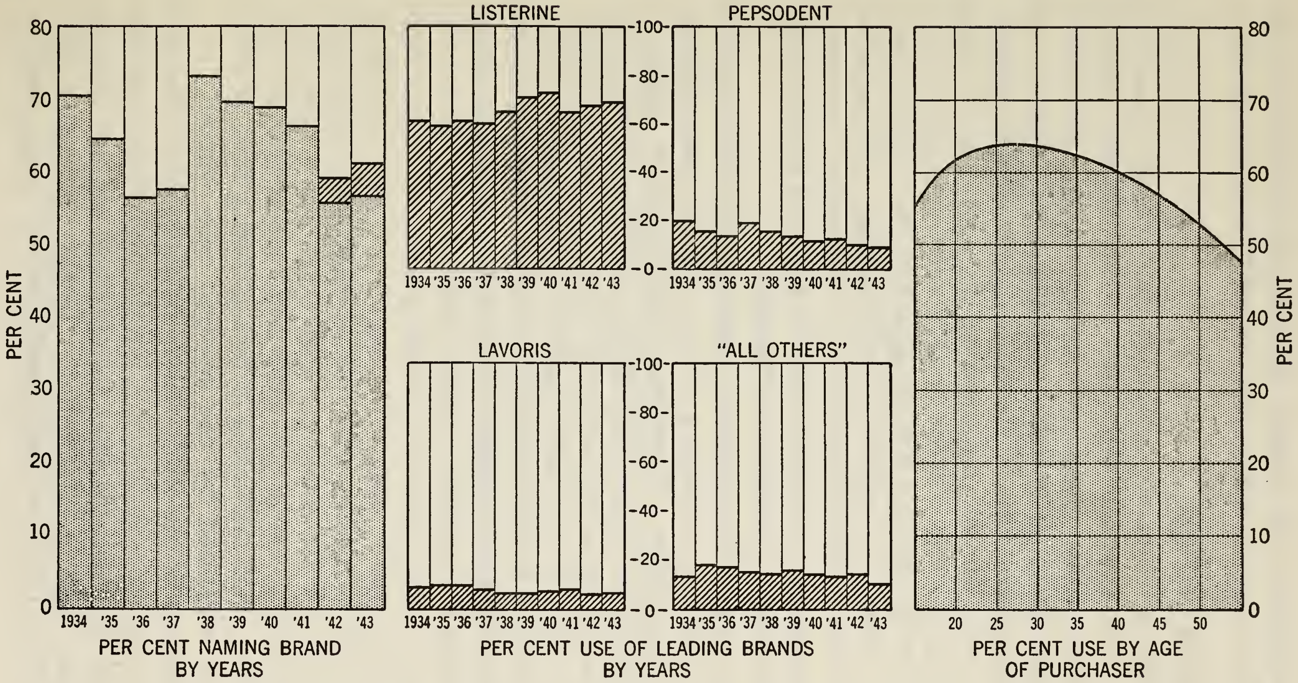


Fig. 8.—Available published information should be checked in the "preliminary-preliminary" study. The annual "Survey of American Beauty" published by the Market Research Department of Modern Magazines gives pertinent statistical data on a broad class of consumer goods. A page is reproduced here.

and attention, and, indeed, thinking about them will do more than any one other thing to clarify the whole problem.

Consulting Services

If the preliminary-preliminary study shows that it is worth while to pursue the matter further, the management research executive should give careful thought to the type of outside help of which he should avail himself. As indicated earlier, one of his routine responsibilities should be to keep himself informed as to consulting services operating in various fields, with special attention to the kind of work they are best equipped to do. Much money can be wasted on outside consulting help. On the other hand, where a new project is to be undertaken, no money is better spent than that which is invested in such help, provided that it is spent intelligently.

One thing the management research man must bear in mind is that in consulting services his company will get what it pays for. Therefore, care should be taken to outline fully the scope of the study, and then to choose the organization especially set up to work in that dimension. For example, in a consumer market survey, the first decision to make in this respect is whether the study should consist of intensive checks in one or two picked localities, or whether it should be a broad, national poll. If it is the latter, the organization undertaking it should have a large enough key staff to ensure thorough supervision in the field, and should have the right kind of statistical talent at its command to make sound extrapolations from sample data. A spot check in one or two cities could conceivably be done by quite a small marketing or fact-gathering firm, or could even be organized by the research man himself.

All aspects of the study should be thoroughly discussed at the very start, so that it is not discovered too late that the form in which the data are obtained will not yield an important type of information. In this connection, it is advisable to talk over the objectives of the major problem with the market organization, rather than merely to give it a specific survey to do. In that way it will be able to offer suggestions on the survey itself and to do a more intelligent job of interpretation. All the key executives involved should be given a chance to pass on the list of objectives drawn up.

A discussion of scientific sampling techniques, field-testing of questionnaires, wording of questionnaires, and the like is beyond the scope of this book. The management research man responsible for an outside survey involving them should satisfy himself as to the competence in these matters of the organization to whom he is turning over the work, bolstering his own impressions with reports from others who have used the same service. He should have or acquire a working knowledge of statistical techniques commonly employed, so that he can better evaluate and interpret the methods and results of the survey organization.

Having "farmed out" key parts of a problem, the management research man has the important responsibility of coordination and follow-up. Several outside studies will usually be kept going at once. He should keep in close touch with all of them, so that he can give an intelligent report of progress on the whole project at any time.

CHAPTER VII

SOME POINTERS ON MAKING INTERNAL MANAGEMENT STUDIES

Internal management studies differ widely in scope. At the lower end of the scale are those which concern something that went wrong, directed toward finding reasons for specific mistakes or faulty performance. At the other end are those made in connection with an over-all survey of a department or division as a whole, to find the reasons for bottlenecks or excessive costs, or to evolve a procedure for handling some entirely new situation—for example, how to conform to a new governmental restriction or regulation, or how to absorb some new function which the organization or division has assumed.

Studying something that went wrong may involve nothing more than checking up on a comparatively simple first possibility or, failing there, finding the answer in a not-too-complex second or third. For example, if an electric bulb fails to light, one may find that it simply has burned out. Or, finding the bulb in good condition, one may check to see if a fuse has blown. Even where examination leads to a more complex source of trouble, as in a faulty light socket, or switch, or even general wiring, the pattern of procedure is usually clear-cut. Most specific management problems of the "why-something-went-wrong" variety follow this analogy.

General management surveys, on the other hand, usually involve a lengthy process in which a great many factors must be kept in mind simultaneously. The best practical performance may be possible only as a result of a succession of readjustments in distribution of responsibilities, flow of work, or changing standards.

Obviously, internal management studies will vary infinitely in their details. However, since by far the most of the data will have to be secured from people doing the work—either as a result of direct interviewing or, often more importantly, from spontaneous suggestions—a common "human relations" thread runs through all studies.

In later chapters, general procedures with respect to studying something that went wrong and to making a general management survey will be discussed. Let us consider here some of the human-relations pointers that must be kept in mind, no matter how broad or how specific the scope of the research may be.

Preparing the Ground

Before any study is begun, it is essential that all appropriate executives and all foremen and supervisors in departments involved be fully informed about it. In practically every case their cooperation will be secured if they are simply given a clear explanation of the purpose of the study. Without their cooperation, not only will the study take longer than it should, but there is also a good chance that it will completely fail of results. Time is not "spent" or "lost" in laying the proper groundwork of this kind; it is invested, and will pay heavy dividends, not only on the current study but also in terms of ready cooperation in subsequent ones.

Special care must be taken to enlist the support of supervisors and foremen. These people are close to their own work and cannot be expected, at a moment's notice, to switch their thinking from departmental problems and adopt a broad, company-wide point of view on a study involving them. If they get the impression that their work is being criticized or that their jobs are somehow in jeopardy, it will be practically impossible for the person making the study to find out about mistakes of the past. Yet these very mistakes may be the one important clue to the whole problem.

Organization Channels

A cardinal rule, always to be remembered, is to go through proper organization channels in all dealings with executives and employees. Nothing arouses antagonism more quickly than going over somebody's head in any matter, even one seemingly trivial. It is usually worth while to stop and think whether a particular memorandum should not be addressed to the head of a department rather than to the person one first had in mind, with perhaps a carbon to the latter. To an inexperienced person this sort of admonition may seem to be laboring a point too greatly; he may feel that it is foolish to hamper direct action with too much regard for the sensibilities of possibly thin-skinned people. The only answer is that it is precisely this sort of almost automatic regard for little human-relations details which differentiates the seasoned executive from the eager beginner.

In the same vein, when a person making a management study or seeking to install a new procedure is working with an operating man who has been assigned to assist on the job, he should let the operating man "carry the ball" with other operating men, insofar as possible. The more he can keep in the background, working in an advisory capacity, the more ready will be the acceptance of new ideas by those affected. The operating man is probably familiar to the others, and speaks their language more easily because he usually knows more about the details of the departmental matters than the staff man. Moreover, if the operating man is given full credit for any good work accomplished, the problem of successful follow-through will have been largely solved.

Getting Information from Employees

Preliminary information needed in a study may be obtained from records or from discussions with employees, or both. The value of records, naturally, depends upon their reliability and up-to-dateness. The caution that must be emphasized about records is that without interpretation they are likely to be misleading. They are frequently incomplete in describing the limitations or special procedures which do not come within the prescribed rules.

Usually the only satisfactory way to conduct a special study is to go directly to the source—to the people who are actually doing the work. The ability to obtain information from people is one of the most important "keys" at the command of the person who sets out to make an effective study within the shortest possible time. However, the right kind of information can be obtained only when there is wholehearted cooperation on the part of the personnel.

To achieve such cooperation, two elements must be present. The first of these is a thorough understanding of the objectives of the study all the way down the line. Without it, the researcher may run against that most difficult and intangible kind of obstacle, passive cooperation. Passive cooperation exists where the word has been passed along not to talk too much—to answer questions, yes, but not to volunteer any information. This means that one is never able to put his finger on any overt lack of helpfulness: everyone is extremely polite and "correct," but there is a frustrating lack of spontaneity. The man making the study may, much to his embarrassment, later elicit some extremely vital information which controverts much of what he has maintained, and his natural exclamation, "Why didn't somebody *tell* me about this?" is met only with a baffling, "You didn't ask about it."

The thing to remember is that passive resistance is often the fault of the person making the study. Either he did not take the trouble to work through proper channels in laying the groundwork or he was guilty of lack of circumspection in dealing with employees. Of course, it is also true that this type of resistance is engendered by a reactionary attitude on the part of the management of the department or division involved. It is human nature to resist new ways of doing things and to see a slur at one's own record or reputation when a departmental study is made. There is no easy formula to apply here; success will depend entirely upon the psychological approach adopted by the research man. The important matter of "face" must be remembered at all times. Suggestions can often be couched more respectfully in the form of questions than as statements or declarations. It will often pay to plant an idea and let it germinate, even though time seems to be lost, rather than to hurry a matter along in too forthright a manner.

The second element is the ability of the person making the study to put people at ease, to inspire confidence in individual workers so that they are willing to talk freely. People respond in different ways, and the approach with different employees may have to vary, but, above all, it always *must* be friendly. If the investigator has not been introduced to the employee by the latter's superior, he should bring the superior's name into the conversation at the very start, in order to make it clear that the whole matter is being handled through proper channels. Above all, the investigator should soft-pedal his own importance in the project. The information has to be obtained by somebody, and he just happens to be the one who has the assignment; he has a job to do, just like the employee. He should be working *with* the employee. As a staff man, he makes requests and never gives orders.

The actual progress of the conversation will depend upon many factors, but it should always be directed toward finding those things about the matter under discussion which represent a problem to that particular employee, or which are a source of frequent annoyance. This will usually make the employee feel that the person making the study is really interested in his or her problems and wants to help find ways to make the job more satisfactory.

As the work and the methods of dealing with various portions of it are being described to the person making the study, he should freely ask questions in regard to any item which is not immediately clear. He should not hesitate to ask a question which may seem elementary to the employee with whom he is discussing the work. Frequently such questions are helpful in breaking the ice, because the employee will feel complimented by having the opportunity to teach the investigator something.

In every instance, before the conversation is completed, the employee should be asked, even if only in an indirect way, whether he has any suggestions to make. It may turn out that he not only has suggestions of value but has made them repeatedly and that for some reason they have not been acted upon—perhaps not even acknowledged. Obviously, such an experience discourages an employee from attempting to improve methods or to use his full abilities.

A word may be in order about taking notes. In the classic detective story, the standard admonition made by the policeman or constable, before taking the suspect in hand, is, "It is my duty to warn you that anything you say may be used against you," whereupon he whips a notebook out of his pocket to be sure not to miss any damaging admission. And anyone who has ever been a witness in a court of law knows the sensation of having everything he says taken down meticulously by the court stenographer. In discussing work with an employee, it may be necessary to take notes, but he certainly should not be made nervous by the thought that his words are being taken down to hold against him later on. If notes are taken, it should be explained that they are merely to keep the person making the study from forgetting important points. It is often helpful to read back the gist of such notes, with the request that the employee call attention to any inaccuracies.

When the same type of work is being reviewed with more than one employee, points made by the first should always be borne in mind during the conversation with the second. If the same kinds of things are causing difficulties, they should, of course, be given special attention.

In talking with employees, it is always important to remember that they may have pressing assignments which are, at the moment, driving them against a deadline. Any answers received under such circumstances are not likely to be as well thought out as they should be. Therefore it is well for the research man to tell an employee, at the outset of a conversation, that, if he has any urgent matters to attend to, he should say so quite frankly, so that the matter can be pursued at some more opportune time. This will always be appreciated and will make for more cooperation. Such seemingly small things are more important than many realize, especially because the first employee with whom the work is discussed will talk about the study to other employees.

Courtesy, tact, patience, and understanding of the employees' problems go a long way in helping a person get information.

Personnel Problems

When employees talk freely, one often learns of difficulties which otherwise may never come to the surface. In this connection, it must be stressed that the management research man must not only respect confidences, but must generally handle himself with extreme tact. While ordinarily an executive must avoid certain forms of confidential conversations for fear of upsetting morale or discipline, the person making management studies is occasionally looked upon as a sort of safety valve, through whom an employee can "blow off steam." It must be recognized that, when an employee has a grievance, it matters little whether he is right or wrong—whether the grievance is real or imaginary. As long as the employee feels that it is real, it is real to him.

The management research man may, at times, have to use the technique employed by "industrial counselors" in many of our large companies—skilled interviewers pledged to inviolate confidence, to whom employees are encouraged to unburden themselves. The counselors bring situations to the attention of departmental management without revealing individual discussions; often merely by engaging a foreman or supervisor in a conversation touching upon the matter that gave rise to the grievance, so that the employee's point of view can be brought to his attention.

Often a grievance can be nipped in the bud, when an investigator discovers it, by seeing to it that proper explanations are made concerning matters about which management assumed that all the facts were already generally known. A case in point is that of a section which was called upon to reorganize its work, so that it could handle its load without the replacement of an employee who had resigned. Many remarks were made to the effect that "it's all right for such and such a section to get additional employees, but we have to handle work without enough girls." Yet, instead of an increase, there was actually a decrease of personnel in the section referred to.

In studying a department or section, one frequently learns of personal difficulties between an employee and his or her supervisor. If statements on that score are made in good taste and with good intentions, pointing to certain problems without any expression of insubordination or arrogance, the best thing to do is to hear them through without making comment and without further inquiries on that subject. Naturally, the person making the study should never start a conversation on a topic of this kind, or even indirectly encourage it. But when it takes place, it is important that he make mental note of it, for there may be more to it than appears at the time.

Experimental Studies

In a substantial number of management problems, no complete answer can be arrived at by mere analysis and observation, since the factors leading to certain results may not be ascertainable in the ordinary run of the operations involved. Therefore, it is frequently desirable to try to get at a solution by experimental methods.

At times it is best to apply the same experimental method to an entire division or department and compare the results with previous performance. In other cases, especially when dealing with large departments, it may be best to have the experimental methods tried out only in certain sections, and to compare the results with performance of other sections continuing to use the old method.

When the results are compared, it should be borne in mind that there may be influences which distort the validity of comparisons. With some people who are used to certain ways of doing things, any change in procedure may materially slow up production during the initial period of a new approach. With others, whose production may have fallen down in either quality or quantity or both, because of the monotony of the "same old thing," a change may produce an improvement which is not indicative of permanent conditions. Results are thus to a considerable extent dependent upon the type of workers involved, and upon the quality of their supervision. Sufficient time must be taken to evaluate the results of change before one can expect a reasonably accurate answer to the question of whether the experiment was a success or a failure. Otherwise, a sound solution (or one that would possibly prove sound with some modifications) may be abandoned before it has had a chance to show its true effects. In physical phenomena, engineers call this "waiting for the steady state." The steady state is even more important when dealing with people.

If the experimental approach has been carefully thought through and the first results (even after the steady state) are not as great as could have been expected, it does not necessarily follow that the solution was wrong. A careful examination should be made to determine the exact reasons that the results are below expectations. It may be found that some seemingly minor factor has been overlooked or insufficiently provided for, and that that factor has affected the entire performance.

Even when it is finally determined that an experiment proves that the methods used in the past are better than the proposed change, there still will be the constructive result of knowing that the methods used are the best known at the moment, and of the stimulus given employees to search continuously for better methods.

CHAPTER VIII

STUDYING SOMETHING THAT WENT WRONG

"Error is a hardy plant: it flourisheth in every soil." Anyone who has had anything to do with devising systems and routines—especially if he has devised a procedure which he fondly believed to be "foolproof"—will sadly concur in that plaint of the poet. The human element, whose importance in every management undertaking we stress again and again, rises to confound the most carefully laid plans by violation of rules, "blind spots" in routine checking and prevention, and often plain dunderheadedness.

Volumes could be written about the causes of human errors in judgment and performance. A curious phenomenon is that once something begins to go wrong, things frequently continue to "go wronger and wronger," one error following another. More than a "hardy plant," error is indeed a weed which will spread and choke the whole garden unless ceaselessly guarded against.

Before entering upon a discussion of studying something that *went* wrong, it may be well to say a few words about the future-tense aspect of the problem—the possibility of preventing errors and of catching serious situations before they develop. Changing conditions frequently point to entirely new problems for which there is no precedent, and occasionally there is hesitancy about taking prompt action with respect to them.

While it is obvious that a superficial handling of a new problem may complicate the situation rather than help it, postponing action until the developments are more pronounced is often even worse. Often the general nature of new problems may be foreseen, so that it is possible to arrange for the necessary data to point to the extent of the problem, the probable frequency of its occurrence, spread of its influence, and the like, on the basis of which final decisions can be reached later. If such arrangements are not made, the gathering of needed data later may be much more costly and time-consuming. As a matter of fact, in some cases, if immediate note of certain problems is not made, it may be practically impossible to get the necessary information later on.

How often, under pressure of an urgent problem is not a change outlined and accepted, which may substitute a new procedure or replace an employee on a specific assignment, without really solving the issue? The effect of such action is often seriously destructive to the morale of employees, who frequently know a great deal more about an existing malsituation than they are given credit for. Thus, while it is desirable that preventive action be taken promptly, it is better to allow sufficient deliberation rather than to announce and act upon makeshift decisions which must later be reversed. The responsibility of the management research executive is clear, especially where his own danger signals flag impending crises.

After preventive measures have been taken, it is essential that results be checked within a reasonable time to make certain that they are effective. The experimental approach mentioned in the last chapter is frequently effective here.

Getting at the Causes

The first requirement for effective dealing with something that went wrong is to know exactly what went wrong, and why. The underlying is always more important than the immediate reason. For example, errors of judgment on the part of individuals may have an almost endless variety of original causes, some of which may be chargeable to that individual employee, some to his immediate superior, and others to the organization as a whole, since they reflect general policies or practices. Still others may be just plain accidents. Understanding of these differences, even where at first glance a simple single cause may be at the bottom of the difficulty, is absolutely necessary to intelligent correction and prevention.

Discussions of mistakes that have been made are at best unpleasant, and are frequently actually destructive of relationships between individuals. It is for this reason that the proper groundwork for a study is so important. Whenever it becomes known that an important official is aware of, or is likely to learn of, a mishap, the entire organization is electrified into a feverish activity of "checking up." Sometimes such flurries have a wholesome effect, but as a rule they are not likely to be of real help to the man making the research. They are like storms; people take shelter to protect themselves against the elements, but, as soon as the wind has died down, they return to their normal way of life.

Obviously, a complaint is one of the earliest symptoms of something that has gone wrong. Therefore, an organization which is really on its toes should welcome information about dissatisfaction on the part of its customers or clients, and there should be a strictly defined procedure in regard to the handling of complaints. If this is not done, many of them will not be known by those who can take preventive steps, because there is a natural tendency on the part of most employees not to bring complaints to the attention of executives to whom they report.

In this connection, an unforgivable crime, even in days of acute labor shortages, is to leave complaints unacknowledged. There may be delays in correcting an unsatisfactory condition—indeed, under conditions that have been prevailing during war, some things simply cannot be corrected—but the complainant should at least have the assurance that his inquiry has been received, and that everything possible is being done to look into the matter.

The ill results that can flow from carelessness in this regard need hardly be labored here. Every business finds it necessary to make recurring checks on this problem, and usually it finds that certain employees have fallen into slipshod methods which insidiously defeat the company's well-thought-out sales and distribution planning.

It is not implied here that a top executive must necessarily pass upon each individual complaint. Nevertheless, if the full value is to be gained from such evidences of poor service or workmanship, records of all complaints should be made. The relationship between the number of complaints of a specific character to total complaints or total transactions may be an extremely sensitive and useful barometer of public reaction. In this connection it must always be remembered that for every complaint made there are usually many more cases of silent dissatisfaction. Moreover, data from complaints may be indicative of changing conditions whose importance may not otherwise have been brought to light.

In view of the above, it will obviously pay the management research specialist to see what sort of defined policy his company has established for handling complaints and, if there is none, to institute the proper procedure as soon as possible. Unless there is a definite procedure, individual complaints will be handled individually and not necessarily consistently, with special attention given to those addressed to the chief executive or other important member of the organization. All complaints deserve equal attention, regardless of the person to whom they are addressed—although it is admitted that, because of the human element, this is not likely to be the case even in the most efficient companies. If extraordinary attention is given to a complaint addressed to the principal executive or someone using his authority, other and more immediate matters may be left unattended, in order to impress upon the "boss" how thoroughly efficient the department is in handling matters referred by him.

By the same token, of course, complaints from within the organization should be looked into promptly, since they, too, may be important symptoms of underlying unbalances or maladjustments.

Why Things Go Wrong

Why do things go wrong? Barring out-and-out accidents or situations simply beyond management control—as when the needs of armed forces in war or of essential industries supporting war make it absolutely impossible to secure labor or materials for a nonwar operation—the basic fault always lies with management. Sometimes the underlying reason stems all the way from top management; more frequently it is poor planning at the operational-executive level, and even more frequently, poor follow-through at the supervisory level. At any rate, management must take the responsibility. Borrowing a phrase from Joseph Conrad, "Such is the prestige, the privilege, and the burden of command."

Despite the variety of circumstances encountered in practice, there are certain human elements which, singly or in combination, will be found to underly every situation that requires correction. The most important of these "common denominators" are

1. Misconception of the nature or objective of an assignment
2. Lack of clear-cut responsibility for performance and follow-through
3. Carelessness and lack of interest on the part of those doing the work
4. Insufficient training
5. Poor supervision over the work
6. Wrong type of employee on the job
7. Poor inspection procedure
8. Panic

The above points are listed separately for emphasis, since any one of them may be the principal reason for something going wrong. Actually, of course, they do not occur as isolated phenomena; they are all tied up together. Insufficient training, for example, may be due to the fact that a labor shortage has made it impossible to get the best kind of people for a given job, and the traditional training or "breaking-in" methods of a company have not been equal to the new situation. This, in turn, may be the chief cause for lack of interest and carelessness on the part of employees. The person studying a problem-situation should check the eight points to see where special attention can be expected to bring the most immediate results. Thus, poor selection may have to be expected in view of outside conditions, and emphasis put first on breaking jobs up so that less experience and skill are needed for each part, and second, on more care and repetition in breaking-in on the job. On the other hand, under more normal conditions, it might be logical to attack the problem at the recruiting point. One large aircraft manufacturing company, for example, practically disbanded its very elaborate recruiting procedure of aptitude tests, personality tests, special interviews, and the like when the labor shortage became acute and concentrated entirely upon a two-part program of advertising and solicitation to interest housewives and others not normally in the labor market to join the organization, and intensive job breakdown and training.

Getting Objectives Straight

Misconception of the nature or objective of an assignment can be of two types. The employees involved may actually have been given faulty or insufficient instructions, or they may have been given clear instructions on their particular part of an over-all job without having been given the larger picture of what the whole operation is designed to accomplish.

The first type can, of course, be overcome by insisting upon clear-cut instructions, in writing wherever possible. Where routine jobs are concerned, a job manual, or manual of procedure, will prove invaluable. It clarifies not only the *how* of handling assignments, but also the *who,* by fixing responsibility for performance. Indeed, a person making a study of why things went wrong in a department may find that the greatest source of difficulty will be eliminated by such a manual. In addition to the other benefits cited, the mere preparation of a manual will frequently suggest improvements in methods. Where a procedure to be put in writing involves more than one department, the management research man can be especially helpful in developing the necessary coordination.

In seeking to correct a "why-things-go-wrong" condition —as, indeed, in much of his management work—the management research man will find it necessary to have numerous conferences of department heads and other executives. It will always be helpful to draw up "minutes" later, covering important points discussed and major decisions reached. Copies should be distributed to those who attended, so that everyone will have a common understanding of the results. Incidentally, the management research man should also keep a journal or diary, in which he can keep a record of the gist of important conversations and of things he did during the day. Thus, even when no formal record is made for distribution, he will avoid misunderstanding later on as to just who said what.

Perhaps more important, in the long run, than giving clear instructions at the start is seeing to it that employees have a *sound perspective* of their jobs—in terms of the overall objective of their work. We say "more important" because if employees understand and are "sold" on the larger end result, they will be in a position to ask intelligent *what* and *why* and *how* questions to clear up original instructions.

This principle of giving people a better picture of just what, basically, they are helping to accomplish has been widely and successfully employed in our war plants. Motion pictures of guns and tanks and planes in actual battle have been brought to the workers. Captured enemy planes or bullet-scarred planes of our own have been put on display. Plant visits of soldiers direct from the battlefields have been arranged. In such cases, of course, the purpose is purely inspirational and is not tied up with instructions about a particular operation. However, the principle can be applied to everyday assignments and should especially be kept in mind in connection with the third point above, concerning lack of interest in the work. Executives and supervisors are too prone to overlook it entirely, giving bare orders or requests without making any attempt to get across the larger concept.

An example in point is the experience of a man responsible for modernizing the accounting systems in a company where the southern plants were far removed from the home office. The operations at these plants were complex and called for detailed hectographed statistical and cost reports for consideration by the executive committee in the company's New York headquarters. Small errors had been frequently found in these reports, and in general their preparation was careless, even "sloppy," as the expert put it. He found that the clerks responsible for the processing of the reports had only the vaguest notions as to their use. He therefore called a group together and dramatized each report individually. He pointed out that this one went to Mr. X, the treasurer, who had to discuss it with the president; that one was the top subject for discussion at the company's executive committee meeting, over which the president presided every week; the other one was routed in New York to Messrs. W, Y, and Z, all "big men" known to the group at the plant; and so on down the line. Improvement in the work after this meeting was immediate and marked. He was amused to note that frequently, thereafter, a clerk would insist upon doing a job over because she was dissatisfied with its general appearance or arrangement, even though he himself would have been willing to accept it.

Responsibility

"What is everybody's business is nobody's business" is time and again borne out where responsibility for performance and follow-through is not clearly defined. When the management research man runs into this situation as a cause for things going wrong, he will usually find it useful to keep one recipe in mind: It will pay to "wipe the slate clean" at the start, and begin all over again, driving home to everyone concerned that the job is to correct a situation, and not to worry about water over the dam. If he does not get this idea across, he will find employees wasting time in trying to get out from under possible censure, instead of helping to find a practical solution.

When a condition has been corrected and a new procedure established, however, care should be taken to see that responsibility for future errors is fixed. While a system of initialing and countersigning can, of course, be carried to extremes, killing all initiative and delaying decisions and action, nevertheless common-sense precaution should be taken to see that routine (but important) functions do not become completely buried in anonymity, making all systematic checkups impossible. It is human nature to take more care with details if it is known that mistakes will definitely and promptly be traced back to the one who made them.

During a wave of economizing, a large organization which used to have complete evidence of responsibility for things going wrong decided to discontinue such work at a "gross saving" of several thousand dollars a year. Within a year the expense resulting from poor handling of problems amounted to several times the apparent saving. The procedure necessary for specifically placing the responsibility for errors has been reinstated.

The advantages of written job procedures has already been referred to. Here is a small, but often effective, pointer to keep in mind in this connection: It will usually pay to be personal and specific in outlining job responsibilities. Thus, instead of writing, "It will be the responsibility of the Planning Department to issue requisitions to the Purchasing Department for supplies on these emergency items," the procedure will be much more sharply defined if it reads, "Miss Jones of the Planning Department will be responsible for issuing purchase requisitions to Mr. Smith, of Purchasing, on these emergency items." Granted that there are arguments against this method in large organizations where company standards are issued to govern actions in branches all over the country, or where shifting personnel would require reissuing instructions every other week, there is much to recommend it in departmental instructions, especially if they are written to correct a "why-something-went-wrong" problem. Such instructions are usually in mimeographed or similarly inexpensive, informal format, which can easily be rerun; moreover, they do not as a rule involve company-wide or plant-wide procedures where a change would require reissue to numerous departments.

Interest

Lack of interest on the part of employees is something that is quite evident in its *consequences*—carelessness, lack of neatness, slow work, often shocking lack of responsibility—but extremely difficult to isolate as to *cause*. For example, in one company all "empty" envelopes from the incoming mail department were collected for one day, and numerous instances of unopened letters were discovered, as well as of envelopes that had been opened but had had only part of their contents removed, so that enclosures, including checks, were discarded. How can one explain such slipshod work? Again, a company received an order, together with a check, that was addressed to another company. But the article ordered, as shown in the advertisement clipping enclosed, was for an article sold by a third concern! In still another case, a manufacturing company sent an order to a department store, for a large number of smocks for its girl employees. A sample of the smock desired was also sent, so that there should be no slip-up as to style. The order was completely lost sight of, resulting in a serious difficulty because the sample smock was routinely handled as "returned merchandise" and sent to stock.

Problems like the foregoing cannot be classed as "poor training" or "poor supervision of work" because the operations involved were simple and routine. They obviously show that the employees involved had not been given the larger significance of their work. They had not attained what has been termed the "we attitude," in which they instinctively would have identified their own interests with those of their employers.

All of this, of course, is tied up with the company's personnel relations in general, an important element of which, insofar as attitude on the job is concerned, is the recognition which management accords to good work. There should be reliable methods by which performance of different individuals, and also of different divisions, can be compared. Otherwise, recognition may be given where only the outward signs are considered. Employees usually know the true conditions, and, if praise is given where it is not deserved, the results are destructive. Members of the management research staff should be in a position to observe the reaction of individual employees as well as groups, and help to bring points to the attention of operating executives to further the company's personnel work.

It should be remembered that some excellent employees may be especially modest and unassuming. As a result, if such employees are hesitant about suggesting possible improvements in procedures, management may for a long time be missing the advantages of better ways of doing things.

Training

In recent years, "green help" has, next to "insufficient help," been the most frequent answer encountered in any investigation of why something went wrong. "Green help" may be an answer to a complaint, but it is an inadequate one and is certainly not stated correctly. It should be, more properly, "insufficient training." In that way the responsibility is put where it belongs; it is taken from the employee and placed squarely on management. The government's Training-Within-Industry Division has in this connection strongly emphasized an excellent motto in its "J.I.T." (job-instructor training) programs: *"If the worker hasn't learned, the instructor hasn't taught."*

Training has always been a direct management problem. It has merely been brought violently into the open in our war years, when its lack could not be buried under the overhead of more people on a job than are really needed.

While the setting up of a training program in a company that does not have a formal procedure is a large-scale project that deserves a book in itself, certain points can be mentioned here, in connection with specific job-instruction. Where something has gone wrong, and it turns out to be a problem of people and not of systems, the management research man should make it his business to find out about the instructional methods in use. If they have broken down because of an emergency, he should find out what can be done to put forced draft under job training.

How much responsibility does the foreman or first-line supervisor have in training? Under emergency conditions, where high labor turnover or unusual expansion has brought many inexperienced persons into the department, have special steps been taken to see that foremen and key workers are using proper techniques with the new help? Do foremen and key workers really know how to teach a job? Are similar jobs being taught uniformly? Are job breakdowns and other helps being used by those who do the instructing? Are helps being used by the learners themselves?

Division____________
Operation Procedure No.__
Job:
Sheet No.__of__Sheets
Operation Description:
Major Equipment:
Date:______________
Suggested Safety Preparations:
Department Head:
Foremen:

STEP	WHAT IS TO BE DONE	HOW YOU ARE TO DO THIS

Fig. 9.—Form used in working up job instruction sheets for green workers. The training staff developed the content of these sheets with the help of foremen and key workers. (Actual content deleted because of security restrictions.) (*Courtesy of Armstrong Cork Company.*)

Figures 6*a* and 6*b* (pages 68 and 69) show typical job breakdowns prepared for instructors, in accordance with the J.I.T. program.

One company which went into extensive metalworking operations in its war work—operations altogether different from its usual type of work—developed special instructional sheets for the learners themselves. A sheet was made up for every job, enlarged, and mounted right at the machine involved, so that a new operator could refer to the pointers at any time. The form used for this is illustrated in Fig. 9, although the actual steps of these war jobs are not detailed. It was found that the largest and most complicated job could be covered in only 18 steps. Most of them required far fewer. Care was taken to give sufficient details in the "How you are to do this" section. Thus, instead of saying, perhaps, "Press release button," the instructions read, "Press red release button at lower right-hand panel."

Although the examples mentioned have to do with factory operations, it need hardly be added that the same fundamental idea can be applied in office routines. The fact that the desirability of job manuals and written procedures finds logical mention in so many parts of this book is an indication of the opportunities—in most companies not realized nearly to the extent possible—inherent in standardized instruction and procedure sheets.

Supervision

In personnel literature, the term "supervision" is usually meant to cover a broad scope of responsibilities which, in the final analysis, would embrace all the eight points discussed in this chapter. As used here, however, the expression "poor supervision over the work" is limited to the actual overseeing and checking of specific operations. In this sense, poor supervision will be found to be at the root of many "something-gone-wrong" problems.

Under some circumstances, a certain lack of the "we attitude" may be condoned, or at least understandable, in rank-and-file employees; but there is no excuse for it in supervisory ranks. Procedures, no matter how well thought out, will work only if those in charge of the departments or subdepartments see that they are followed, and are alert for slip-ups. Thus it is quite possible that a person checking into the reasons for certain types of delays will find this situation: An employee is responsible for only one portion of an order or requisition, and this portion is not urgent. He handles his part of the work and then routinely sends the order on to be handled by the next employee, without troubling to expedite it for the part that is marked urgent. This type of problem is definitely one of supervision, for there comes a point where it is not profitable to hedge operations about with sufficient automatic "flags" or checks; wide-awake supervision should catch unusual situations. Similarly, errors that were incurred in Department B because figures on sixth and seventh carbons of data typed in Department A were illegible were justifiable charged up against supervision. The answer, of course, was to standardize on thinner sheets, but an alert department head should have visualized the use to which this material was to be put and should never have permitted the work to pass in the first place. Similarly chargeable to supervision are things going wrong as a result of delay in conveying information affecting the department's needs, as when sales in a large retail organization are made of items out of stock. Of course, a definite supervisory responsibility is to see that work paid for is actually done! Under labor conditions in wartime, when employees are hired who would not meet normal standards, a research man will frequently find people claiming that work was done which actually was not touched, as when, in one case, a large batch of letters was thrown away instead of being processed and mailed.

Selection

The wrong type of employee on the job may frequently be an underlying cause for things going wrong. Under man-power shortage conditions, of course, there is often not much that can be done about meeting the most desirable selection standards. Even in the nonwar times confronting us, managements will not be entirely free agents in the matter of choice. But certainly whatever can be done should be done, and usually there are numerous practical steps that can be taken.

As in the case of training procedures, the institution of more scientific selection methods—the use of aptitude and perhaps personality tests, more scientific interview methods, individual follow-up on the quality of work of employees—is a major project, and deserves a place in the over-all, long-range management research program. In studying something that went wrong, the management research man should, however, make sure that certain practical, immediate steps in the company's recruitment and induction procedures are not being overlooked.

One clue, of course, should be the department's separation rate. Is this greater or less than a fair "par" based on industry, community, or company-wide experience? Are selection and induction at the root of high turnover? Are certain traditional stipulations regarding desired age ranges, marital status, or the like interfering with the acquisition of desirable, long-staying personnel? How is the employee treated on those important first and second days on the job? Does the company have a system of upgrading which permits getting good people from other jobs to fill places where trouble is frequently encountered?

Many readers will remember the depression days, when a man over forty, out of work, found his age a desperate barrier to getting on another pay roll. Many restrictions of this sort persisted well into the emergency era and had to be given up one by one. Thus, recently, a metals-working company in New England advertised for retired skilled workmen, seventy, eighty, and even ninety years old! Many an oldster responded, and all who were hired proved themselves valuable precision workers. The company overcame a serious bottleneck in skilled crafts, and the men themselves found zest in an opportunity to be of service again.

Inspection

The inspection procedure may be such that, without blame attaching to any particular employee, things can go wrong simply because there is no way of catching errors. For example, dependency may be placed upon statements by purveyors of equipment or supplies, without arrangements having been made for a check by the organization receiving the goods. Thus, in a large department store an extremely fast-moving toy item—a movie projector—was accepted on the basis of a sample and a statement that they were properly packaged for home assembly. A spot check of a management research executive showed that more than half were not properly adjusted and could not be assembled satisfactorily by the purchasers. Had this not been detected, a great number of complaints and a considerable cost would have been incurred.

While checking of routine work should prevent errors, checking often becomes excessive, and hence too costly. Moreover, errors are often found to be due to the fact that the first checkers slacken off on their vigilance because they know someone else will do a final checking job, while the final checkers, in the same vein, allow themselves to be careless because they think the first checkers would have caught anything important. It may well be that in many routine operations check sheets or guide sheets can help employees to do their own checking, so that perhaps only an infrequent spot check will be necessary.

Incidentally, in any study of errors in a department it may be well to see whether the largest percentage is caused by a relatively few employees. These employees, either because they are not suited to the work or because they have not the proper background, may be "error-prone," just as investigators of accident experiences in many kinds of industrial operations have discovered that certain employees seem to be "accident-prone," and hence, although constituting only a small minority, may be accounting for by far the greatest percentage of accidents.

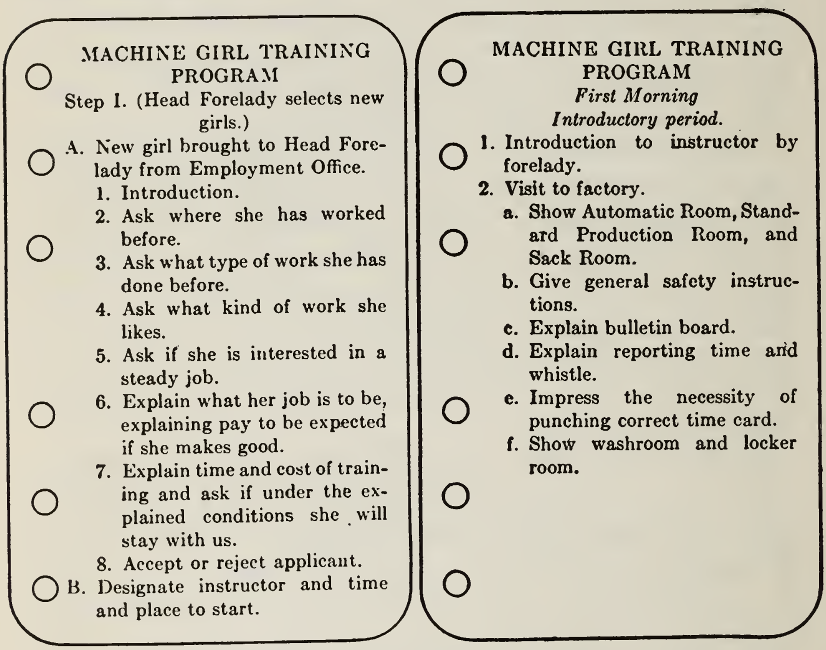
Panic

Panic—or, more mildly, "jitters"—should not be overlooked in any search into causes for things going wrong. This is especially important in any department where there are many new employees, particularly where housewives and others have been hired who may never before have been in a factory or office environment.

Many otherwise good employees become panicky when things begin going wrong, or even when the boss just happens to be passing by. This may perhaps be less apparent, or less believable, in a period when the labor market is exceptionally tight, but it obtains nevertheless. It leads not only to original mistakes, but also to attempts to cover up and alibi afterward, thus making the task of discovering causes and setting up "danger signals" doubly difficult.

In this connection, the induction procedures already referred to are extremely important. All of the government's Training-Within-Industry programs stress the need of "putting the learner at ease." Putting-at-ease should be emphasized in the introductory procedure followed during an employee's first day on the job, not overlooking such simple things as explanation of certain important company rules, location of washrooms and locker rooms, and introduction to supervisors and one or two fellow workmen. These things should be brought up at meetings of foremen or supervisors, or perhaps special meetings of key men should be called for this purpose alone. It is usually more effective to have such people develop their own check points on induction than to present them with standardized procedures. Whatever they develop can be worked up for inclusion in supervisory manuals, if they exist, or simply on special mimeographed sheets. Figure 10 shows a simple set of rules developed by foremen and machine adjusters in one factory.

If the personnel department is not set up to produce company rule books and booklets about the company, for presentation to new employees, the management research man has a job cut out for himself, to help create these induction aids.



MACHINE GIRL TRAINING PROGRAM

Step I. (Head Forelady selects new girls.)

A. New girl brought to Head Forelady from Employment Office.
  1. Introduction.
  2. Ask where she has worked before.
  3. Ask what type of work she has done before.
  4. Ask what kind of work she likes.
  5. Ask if she is interested in a steady job.
  6. Explain what her job is to be, explaining pay to be expected if she makes good.
  7. Explain time and cost of training and ask if under the explained conditions she will stay with us.
  8. Accept or reject applicant.

B. Designate instructor and time and place to start.

MACHINE GIRL TRAINING PROGRAM

First Morning

Introductory period.

1. Introduction to instructor by forelady.
2. Visit to factory.
  a. Show Automatic Room, Standard Production Room, and Sack Room.
  b. Give general safety instructions.
  c. Explain bulletin board.
  d. Explain reporting time and whistle.
  e. Impress the necessity of punching correct time card.
  f. Show washroom and locker room.

Fig. 10.—Sheets on induction for inclusion in training manual. (For actual size, see Fig. 6*a* and *b*, pages 68 and 69.)

In considering uneasiness or poor morale as a factor interfering with employee efficiency, it should be remembered that these troubles go hand in hand with an uninformed body of employees. When an important policy decision affecting employees is made, the average employee is often not in a position to understand the reason for the decision. This creates confusion and results in having employees spend a good part of their time discussing the matter instead of concentrating on their work.

There may be matters on which, for valid reasons, no explanation can be given. As a rule, however, the absence of an explanation is due to the fact that those who made the decision simply assumed that the reasons for it would be clear to everybody. This is almost as if a teacher forgot that his pupils do not know enough to follow his brief presentation of a complicated problem.

Every time a policy decision is supplemented by a clear statement of reasons for the decision, it leaves a constructive impression on the employees.

Friction

We have not included personal friction among the eight specific causes of things going wrong, because, while there is some overlapping in the others, this "cause" is completely all-inclusive, being in itself an effect of any or all of the eight mentioned. The effect of friction in human relationships upon efficiency is identical to that of friction in a machine. It not only causes an immediate loss of output, but also results in wearing out at the point of greatest pressure. The big danger is that, unless the condition is brought to the surface, a breakdown may take place at the most unexpected time and place. Wherever it appears that employees are not getting along with each other, with their immediate supervisor, or with some adjacent department, the underlying causes should be ascertained as quickly as possible, and corrected.

"Why?"

While the foregoing discussion has concerned itself with the human element in the reasons for things going wrong, it is not contended that the cause lies always with people and never with procedures. Because of his detached position and fresh viewpoint, the management research man will often find the root of the trouble by observing operations, and then sitting back and asking a common-sense "Why?" about various things that are done.

For example, analysis of complaints in a large mail-order business showed numerous instances of customer dissatisfaction with charges made for postage on orders sent to out-of-town customers. Investigation showed that a system of averaging charges had been in use for years, which provided an "allowance" toward the shipping cost, related to value of purchase. Because of the method used, of grouping certain weights and territories, about 50 per cent of the charges were actually too high, and 50 per cent were too low. The latter, of course, elicited no complaints. A system based on postal zones was the solution. Again, checking packing practices led to investigation of all containers in use. Study of samples showed that a certain kind could not be used at all without tearing the products shipped in them. Why was a certain kind of cardboard stock used in large-quantity mailing pieces? There was no real reason, aside from the fact that apparently no one had questioned the matter; yet a checkup showed that most of the pieces did not stand up under routine postal handling. Why were there so many reports of "record temporarily out of file" when information was required of certain records? Records were being removed for handling at all times during the day, on any day of the week, despite the fact that the whole record had to be available for practically constant reference. Since the rate information desired from the cards did not depend upon the very latest postings, a much more satisfactory arrangement was established under which these postings were made only during certain specified hours in the week, when there would be no reference demand for the records.

CHAPTER IX

MAKING A GENERAL MANAGEMENT SURVEY

Needless to say, all the human-relations factors brought out in the two previous chapters are applicable (and indispensable) to the general management survey. Since the efficiency of the entire department or division is being examined, it is even more important to lay the proper groundwork with the executives and supervisors, for they may quite naturally take the defensive attitude that their individual performance is being questioned.

A general survey of a division or department will usually embrace the following:

1. Standards covering specific operations, which give the necessary quantitative information about performance
2. Methods improvement
3. Distribution of authority and responsibility
4. Coordination of the work of the department with that of other units and departments

Here again, we are dealing not with isolated problems, but with factors that are interrelated. Thus, analysis of existing indices and controls, or studies directed toward setting up new ones where none exist, will in themselves often bring to light opportunities for methods improvements; and proper distribution of authority and responsibility may in itself be the answer to a departmental bottleneck or to a problem of coordination with other departments.

Standards

There are four basic factors which, taken together, determine the effectiveness of operations: (1) unit cost; (2) quantity; (3) quality; and (4) promptness. As a rule, these factors are more effectively controlled in manufacturing operations than in other phases of a business, simply because factory output usually lends itself more readily to measurement, and hence to the setting up of reliable indices.

Where cost is no object, it is usually easy to meet any reasonable objectives as to quantity, quality, and promptness simply by adding employees of requisite skills and experience. In isolated cases the nature of the problem may permit such an expedient, but it is far more likely that costs must be kept within specified limits. This in turn raises the question of what is "reasonable" cost. In some cases it may be difficult to establish reasonableness without a thorough study. Occasionally the approach is to assign a certain amount of money for a specific function or operation, and with this as a starting point, to establish the standards of quantity, quality, and promptness that can be met within the budget.

It should be helpful to consider an operation where there were no standards in the past. Since, as stated above, manufacturing operations are usually ahead of other parts of a business with respect to standards and controls, let us take a correspondence division for our illustration.

Here the quantity of production would be the number of letters written in a given period of time—day, week, or month. The quality of work would be harder to define, since it might include a number of varying requirements. However, let us assume it to be measured by the percentage of letters which are released without corrections, the changes of mind on the part of dictators not being considered as "corrections" insofar as the stenographic work is evaluated. The up-to-dateness, or promptness, would be measured by the number of letters dictated up to, say, four o'clock in the afternoon, which are left untranscribed at the end of the day. The unit cost, disregarding all indirect costs, would be the cost of stenographic personnel per letter released.

Naturally, the more experienced the stenographic personnel, the higher will be its production and quality. Promptness, of course, is dependent not only upon the competence of the stenographer, but also upon the number of letters dictated. It can be assumed that the cost of more competent employees, per employee hour, will be higher than that of less competent ones; but that does not mean that the unit cost, per letter released, will not be lower with experienced personnel than it will with employees who know less about the enterprise and about matters discussed in letters.

Let us say that the average unit cost of a letter has been established. Is the type of letter in question worth that amount? Should some other method of writing these letters—perhaps filled-in forms—be looked for? When the question of total cost is considered, the indirect costs, as for example the time of the dictator, the space, the equipment, and the like, must be borne in mind.

In our illustration, "quality" has less bearing on cost than in many other types of work; but it is easy to imagine cases where the standard of quality could have a great deal to do with cost—for example, where no erasures or corrections would be allowed in letters, so that if a mistake in typing were made, the stenographer would have to retype the entire letter. In this connection it must be remembered that undue striving for perfection can prove extremely costly, since in addition to slower work it involves particularly careful checking.

Promptness is a control which can definitely be brought to bear upon unit cost. Where the back list of work piles high, it is inevitable that, unless the work has no urgency whatever, special checking will have to be done to see whether this or that particular item has been taken care of.

Furthermore, back lists usually lead to additional difficulties in the form of complaints or holdups of other people in their work. A partial solution, of course, is the establishment of a maximum permissible back list, and special notation of items which have precedence. However, the division of work into "regular" and "urgent" means extra handling and consequently greater cost.

Continuing with our example of stenographic work, we might ask how soon should a letter be released after it has been dictated; or, possibly, how soon after a letter is received should it be acknowledged? The latter question, of course, involves more than the stenographic service.

Let us imagine that a maximum of forty-eight hours has been decided upon. Have arrangements been made so that no letter would remain unanswered or unacknowledged beyond such a period? Is it an effective control? Is the cost of such a control justifiable?

In connection with unreasonable back lists, it must be remembered that the very fact of their existence is likely to reduce average production after the first spurt of trying to "catch up," since they give rise to a discouraging feeling of hopelessness in trying to cope with the problem. There is another reason why an excessive back list is dangerous. Employees lose the feeling that the work is important and often urgent. They lose interest in trying to get it out, for they feel that if it really were important enough, their bosses would have made the necessary arrangements to make it possible to get the work out on time.

One rather curious condition that may occasionally be encountered is that of a unit which consistently has a back list of, let us say, two days' work at the end of each day. The unreasonableness of this situation lies in the fact that since the size of the back list does not increase further, the current personnel is adequate to take care of currently received work. In other words, if in some way the unit can be brought up to date—to, say, a half day's back list—

it should be in a position to continue to maintain such a reasonable back list for the rest of the time.

The balance of unfinished work, whether in the form of unfilled orders, unanswered complaints, or any of the many items of work, is indicative of more than one problem.

First of all, it should be remembered that promptness is generally appreciated as a specific courtesy. Conversely, much good will can be lost, and ill feeling created, when unreasonable delays are incurred. This is true with respect to inside operations as well as where outside individuals or organizations are involved. Of course, undue haste in dealing with problems, just like any form of perfectionism, can be nonproductive and costly as would be a rule that every letter had to be answered within, say, two hours after receipt. That is why the element of promptness deserves a definite standard.

Unreasonable delays in handling work not only result in dissatisfaction, but also cause waste in the form of repeated reviews, reassignment of work, and dealing with inquiries and complaints, in addition to the confusion which frequently is the by-product of any sort of bottleneck.

Any rule with respect to promptness or to a limit of back lists must be tailor-made to suit the specific situation. In some cases, a maximum of one day's work would be a great deal; in others, a week's production would be reasonable. One must carefully consider how the function in question affects the rest of the organization. Some work—for example, the weeding out of old files or the reconverting of returned merchandise—may properly be a "filler," to be done only when time and personnel are available. However, it is usually desirable that definite standards of promptness and back lists be established.

Just how large a unit should be before keeping records of its production becomes justified is another problem whose answer depends upon special situations. The figures of production may be necessary for purposes unconnected with the unit's efficiency—for example, where governmental restrictions of supply require detailed records.

In addition to the question of measuring production, data of this kind are often needed for determining the flow of work, so that the unit's schedules can be made as closely parallel as possible with the flow of work throughout the organization. In some operations there are, in addition to seasonal fluctuations, monthly, weekly, or even daily changes in incoming work. When these are of sufficient magnitude, it may be desirable to provide for special handling to take care of predictable spurts.

Since there are usually many groups within an organization dealing with different phases of production of the same final item, as well as with different items, it is necessary to decide where the controls or indices of performance are needed for individual units, and where they may be used for combinations of units.

Take as an example an organization which does a considerable amount of accounting. One group is charged with the responsibility of checking and posting items, both for payment of bills and for charges to be billed to customers. Another group of employees is responsible for the actual making out of checks and bills. However up-to-date may be the unit responsible for issuing the checks and bills, the final date of release will depend upon the speed with which the posters complete their job. Let us say that for the combined operations a norm of promptness of three days has been established, assuming that the posters may require two business days to complete their work, and the issuers one day. An analysis of the completed work would show the over-all promptness of operations, but would not show the relative performance of the individual units. Thus, for both of these units the following data would show:

Number of items handled per day	Number of items completed later than 3 days after receipt	Ratio of delays, per cent
1,000	50	5

However, a breakdown for individual units would show up as follows:

Number of items handled per day	*Posting* unit's items handled later than 2 days after receipt	Ratio of delays, per cent
1,000	80	8

Number of items handled per day	*Issuing* unit's items handled later than 1 day after receipt	Ratio of delays, per cent
1,000	10	1

In the breakdown, it should be noted that, since the delays do not necessarily affect the same items, the total of items delayed beyond three days after receipt is not equal to the addition of items which have been delayed beyond the norm established for each of the separate units.

In Chap. IV we alluded to sampling. The points made there should be kept in mind in setting up standards for specific operations. Sampling is usually applicable in controlling the quality of work where individual inspection is not absolutely essential. Of course, the standard of quality must first be established. Let us say it has been found that a comptometer operator dealing with certain statistical records makes, on an average, only two or three errors a week, and that the cost of such errors would not be in excess of one dollar each. Obviously, rechecking all her work would be an unproductive function, far in excess of any saving possible.

Improved Methods

Flow of Work

The normal approach in analyzing the work of a department is to follow it through in accordance with the sequence of operations, with a resounding "Why?" at frequent intervals. In companies where "work simplification" programs have been undertaken in manufacturing departments, often the mere charting of the progress of work, showing the distances traveled, have indicated unnecessary steps and transportation, leading to large savings even before individual operations were analyzed for improvement.

In clerical operations, "methods departments" have not been brought into play with the same effect as in manufacturing departments. Consequently, one is more apt to come upon duplications of work or unnecessary work in office operations, which have not been time-studied and analyzed to the extent followed in the plant. The handling of mail is a common example of duplication. It is customary, for example, for a person acting for a division to read the incoming mail and then mark it for the department to which it is forwarded. It is then quite possible that in each department there will be another person who reads the incoming correspondence and marks it for the specific section that must attend to it. When the letter in question reaches the section, it may again be read by the mail clerk and finally sent on to the individual who will attend to it.

Just how are materials and supplies kept track of, from the time they come into the receiving department to the time they are actually requisitioned out for processing? How big a time lag is there between the physical receipt and the posting on cards consulted by those who must plan work and use the materials? How is an incoming order "edited," and who gets the triplicate and quadruplicate copies, and why? One company had an effective slogan: "All departments have only one customer—*the sales department!*" Every move was analyzed with respect to the promptness and efficiency with which orders by the sales department were handled, and with which pertinent information was given to the sales department respecting "out" items, holdups, handling of complaints, etc. Cost systems and sales-analysis systems are extremely important, but the working of the systems should not cause holdups in getting the goods out.

In going over the work of an individual, step by step, the most effective approach is to ask him to describe the work which he was doing at the time of questioning. After this has been explained, it is useful to go over the "pending" work which the employee has not yet had a chance to tackle, or which he has had to put aside for completion later. In this connection it is always important to ask the employee which part of the pending work is most urgent and on what basis he makes that judgment.

In discussing the "Why?" with individual employees, it is important not to press for an answer if it is not readily forthcoming. Reluctance to reply usually means that the employee does not have a clear idea on the matter or does not feel that his ideas should be expressed because of some special circumstance. Insistence upon an answer, however tactful, may be misunderstood and cause resentment; worse still, it may produce a guess or an invention. The best procedure is to let the matter rest, and later check it with some other employee doing similar work or with the supervisor.

Certain situations and certain problems are "perennials." They invariably appear at certain periods of the year. To meet these in the light of previous experience, it is important to have a special calendar calling the problems to the attention of those responsible for handling them well in advance of the critical period.

Evenness in the flow of work and distribution of load should be one objective of any general departmental or divisional survey, since peaks and valleys in output inevitably result in excessive costs. In nonmechanical operations, the casual observer cannot tell when employees are "taking it easy," since they will always contrive to look busy; but in some periods, average production in units to which work does not flow evenly will be far below standard. On the other hand, to keep abreast of the work during peak load periods, quality of work may drop to a lower point than would be allowed if the facts were known. Therefore, in this phase of a management review, it is important to obtain from supervisors the same kind of information regarding the functioning of the unit as a whole, and the collective "headaches" of the unit, as has been mentioned with respect to individual workers.

While it is naturally impossible to foresee all problems, it is usually feasible to set up a procedure to handle the major flow of work and to arrange that the unusual be shunted to some special unit consisting of employees with greater experience or more specialized training, so that bottlenecks in at least the major portion of the work will be prevented. An illustration is a situation which arose during the gasoline restrictions on store deliveries, when many people came in person for their fur coats which had been stored in warehouse vaults. This procedure made it necessary to have the coats delivered to the place where the customer would call for them, instead of holding them in the warehouse until a withdrawal order was issued. It was soon found advisable to set up a special procedure for handling cases where the item could not be located immediately. Otherwise, trying to straighten out such a situation—whether the inability to locate the coat was due to an error in spelling, change of name, or mistaken handling—would hold up a number of waiting customers who could be disposed of promptly. The solution was to have special employees available to ask the customers to follow them to another office whenever a coat could not be found. There a search for the missing item was arranged.

Where a bottleneck situation exists, a solution may be to have certain preparatory work done in the jammed-up department before it receives the job from the department which must handle it first. The problem then becomes merely one of advance notification. A bottleneck is occasionally caused by permitting a unit to become too far behind in its work. There then follows, as a rule, "special handling" of items which cannot be held up any longer, which in itself will mean interruption of the regular flow of work, and additional loss of time. Underlying causes of bottlenecks are numerous, but the holdup (if it is a human-equation one, and not merely a shortage of materials) usually means that too many functions are placed on certain people or that certain people are not adequately trained. It is often possible to obtain a temporary use of personnel from a division next in line, as soon as the management there is made aware of the havoc which is in store for it if the bottleneck in the first is allowed to continue.

Perhaps the most natural tendency in handling bottlenecks is to have certain employees work overtime. This practice should always be considered an expedient rather than a solution. Overtime is expensive not only because of extra compensation, but because it so often means a reduction in average production. Where women are employed, it is important to watch whether absenteeism increases markedly after overtime periods.

Use of Time

It is not within the scope of this book to go into a detailed discussion of stop-watch time studies, since analyses made by the management research man are not conceived to usurp the functions of the time-study specialist in the plant, who usually is part of a methods department and is responsible for standards on specific production operations. However, the management research man is vitally concerned with the way time is used in the department as a whole, where it appears to be wasted. Following is a brief check list of the more frequently encountered causes of wasted time:

1. Idle time caused by poor planning or supervision
2. Waiting because of lack of facilities
3. Delays caused by poor methods in Receiving and Stores departments—items cannot be found

4. Too much handling and transporting
5. Double checking instead of proper care in the first instance
6. Manual operations that should obviously be performed by machines
7. Departmental bottlenecks
8. Unnecessary work and useless functions

Analyses directed at the above, while often making use of data supplied by time-study engineers, are not in themselves "stop-watch" studies, but rather common-sense observation.

Some sources of wasted time are so obvious that they tend to be overlooked. An example is the improper use of the interoffice telephone. A person calls someone else for information. This information has to be looked up. The person who is asked for it says, "Just a moment—I'll look it up," and leaves the caller waiting on the other end, using up his time and tying up both extensions. A lot of office time will be saved by a simple rule that, when information is not readily available, the person asked for it will call back.

Where office operations are being reviewed, it is often advantageous to make use of self-administered time studies,

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EXPLANATORY STATEMENT GIVEN EMPLOYEES WITH TIME SHEET (Fig. 11)

DAILY TIME SHEETS

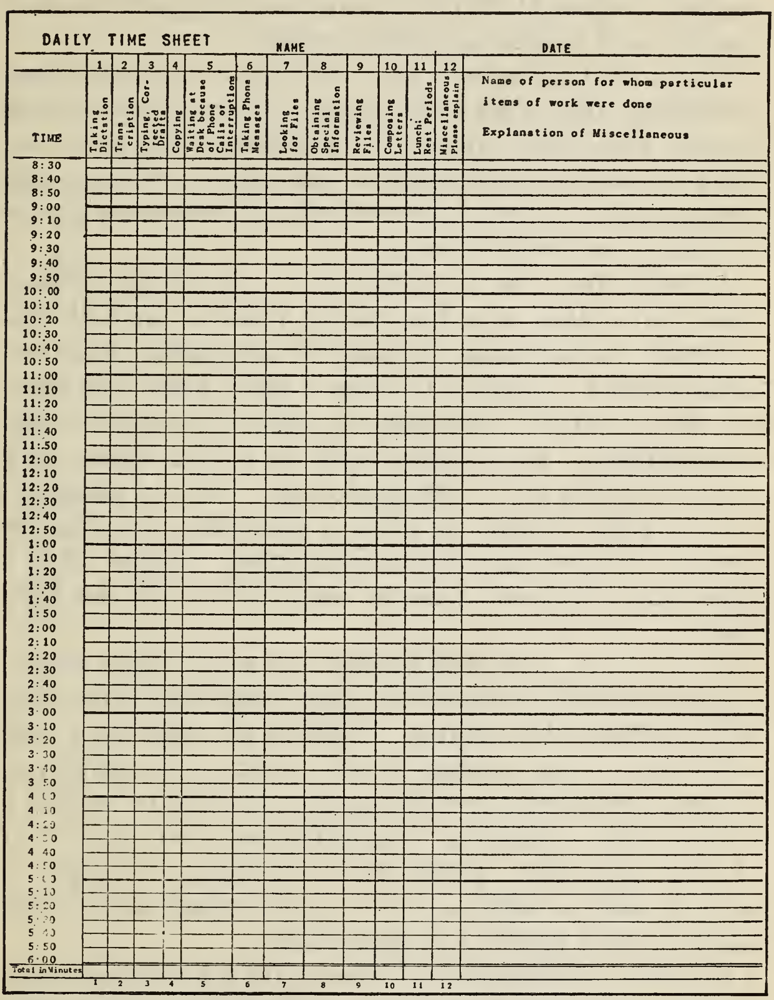
For the remaining days of February, beginning with February 15, in order to obtain an accurate record of the amount of time devoted to various phases of the work, you are asked to keep a detailed record of the time spent on different types of work.

The time sheet attached is to be marked by drawing a vertical pencil line under the appropriate heading opposite the time devoted to that particular work. The time spent in any operation is to be indicated in periods of not less than 5 minutes; consequently, if more than 2 minutes but less than 7 minutes, mark off a half space, or if less than 10 minutes but more than 7 minutes, mark off a full space. To be accurate this record *must be kept currently* as the nature of work changes and not left for filling in at the end of the day. Consequently, before beginning a different operation, the necessary record of the time for the operation just completed is to be made.

The name of the person for whom the work was done should be marked in each instance in the right hand column, which is also to be used for explaining "miscellaneous" items of work not covered by specific classifications.

Should you have any questions in regard to the use of this form, please consult Miss ——————.

so that the employees themselves can keep a daily record of their own activities. In such cases, of course, it is doubly important that a clear statement of the purpose of the study be made. Employees are generally inclined to question the motives of management when new methods are introduced and may be prone to assume that the pur-



DAILY TIME SHEET NAME DATE

	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	Taking Dictation	Transcription	Typing, Corrected Drafts	Copying	Waiting at Desk because of Phone Calls or Interruptions	Taking Phone Messages	Looking for Files	Obtaining Special Information	Reviewing Files	Composing Letters	Lunch: Rest Periods	Miscellaneous Please explain	Name of person for whom particular items of work were done Explanation of Miscellaneous
8:30													
8:40													
8:50													
9:00													
9:10													
9:20													
9:30													
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4:50													
5:00													
5:10													
5:20													
5:30													
5:40													
5:50													
6:00													
Total in Minutes													
	1	2	3	4	5	6	7	8	9	10	11	12	

FIG. 11.—Form used for analyzing the work of secretaries and stenographers.

the study be made. Employees are generally inclined to question the motives of management when new methods are introduced and may be prone to assume that the purpose of the time study is to speed them up or to "squeeze more work out of them." It is preferable that the statement about the study be in written form, since if it is carefully prepared it will give less opportunity for misunderstanding and misleading interpretation.

Where the time records are to be kept by the employees themselves, they must be arranged in the simplest possible manner and leave nothing to individual interpretation. The breakdown of operations or functions must be thought through with care, and it is usually best to test out a sample for clarity and completeness.

A simple form for such studies is a Daily Time Sheet ruled horizontally into five-minute intervals and divided vertically into sections referring to the specific functions being studied. Figure 11 shows a form which has actually been used for analyzing the work of secretaries and stenographers. Reproduced with it is the explanatory statement given out to the employees. The girl using this form is asked merely to draw a pencil line denoting the amount of time taken for each function. Figure 12 is a Recapitulation Sheet to use in conjunction with the Time Sheet.

It is obvious that such studies can supply only general information and are not in any way indicative of the speed of an individual employee. Neither are they as a rule indicative of the quality of the work of an employee, although under ideal conditions it is possible to include a column with a heading "Correction of your errors" or "Doing over work which was unusable." Inclusion of such an item is definitely not recommended, because the results are not likely to be dependable.

Despite the limitations mentioned, the information which can be secured from such studies can be extremely valuable; and if the form is carefully prepared, the amount of time required of an employee temporarily using it for the study is small. The important point, of course, is that the

RECAPITULATION SHEET

NAME PERIOD FROM TO INCL.

DATE	TOTAL TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
TOTAL																									
TOTAL																									
TOTAL																									
TOTAL																									
GR. TOT.																									
%																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		

Fig. 12.—Recapitulation Sheet used by analyzer in conjunction with Time Sheet.

employees conscientiously record the data as accurately as possible.

The object of the time study illustrated is to find items representing "avoidable waste"—for example, in the case of stenographers, time lost by them in waiting for the person dictating to get his work organized, or waiting while that person is interrupted by telephone calls or visitors. Therefore it is necessary that, preliminary to the study, all possible sources of waste of time by the operators be ascertained. Generally speaking, the following time-used classifications are likely to be found in most kinds of clerical work:

1. Original instructions by the person assigning the work
2. Actual performance of work
3. Obtaining further instructions on portions of the work which were not made clear
4. Obtaining additional data or instructions from other sources
5. Changes made by the person assigning the work
6. Corrections
7. Waiting for assignments
8. Waiting for supplies

If the employee was properly instructed in the first place, there should be no more than a nominal amount of time spent on obtaining further instructions or on corrections. If a comparatively large amount appears in either classification, further investigation is in order, and it is usually to be expected that possibilities for substantial improvement exist.

When the distribution of time on the part of one employee working on an assignment similar to others materially differs from the distribution shown by the others, it should be considered a clue to a problem related either to the performance of that employee or to the performance of the others, or both.

It is essential that the employees thoroughly understand the various classifications into which they are asked to break down their working time. Wide fluctuations in distribution of time, from day to day, may be indicative of special problems. It is therefore advisable that the time sheets for each day be reviewed early the next day, compared with the previous sheets, and any questionable item immediately discussed with the employee. If such a discussion is postponed, the employee may not remember the details on which additional information is desired. The person making the study, however, may never know it was forgotten, because the employee may prefer to guess at an answer than show that he does not remember the facts.

It is preferable that every employee who is keeping such a time-study record be asked, during the first day of the study, whether he has any questions, so that further clarification can be given promptly, before the study has progressed incorrectly so far as to make a substantial portion of it worthless.

Usually the fewer subdivisions there are in a form of this sort, the more accurate the results will be. Since, however, during the first study of this kind some specific type of work may be overlooked, it is advisable to provide a special column for "unclassified" or "miscellaneous" items, with a request that every entry in this column be further explained in the column at the right, provided for notes. For the purpose of comparison, summary sheets should be provided, where daily totals for each employee can be entered. It is simpler to keep such totals in minutes than to convert them into hours and minutes.

Since the sheets should provide time for luncheon and rest periods, it is possible that some employees may think the purpose of the study is to check on them especially from that point of view. Therefore, that point should be specifically emphasized in the explanation at the very start.

When the main purpose of reviewing the work of a department is to increase production, and a number of employees are engaged in similar types of work, it is often possible to arrive at over-all improvement by comparing the methods of the employee having the highest production record with those of the employee whose production is lowest. In many routine operations it will be found that the person with the highest output record also has the lowest record of substandard performance. The high producer usually understands thoroughly what he is doing, and why he does it in that way. The poor worker often "just does" things, without having taken the trouble to find the best way. Often a simple way to step up production is to have the efficient employee, who usually has a high morale level, act as a sort of sponsor for a new employee or one who needs help.

However, there is one point to keep in mind about the intelligent and experienced employee where a sample of actual operating performance is taken of routine work employing fairly large numbers. That is that the particularly bright employee may not be a fair sample, and conclusions based on his or her work may be misleading.

Suggestions from Employees

No attempt at methods improvement should be undertaken without taking advantage of the ideas and suggestions of the employees and supervisors who are close to the work. Many companies today have elaborate suggestion systems, organized to stimulate and reward constructive thinking on the part of employees. Usually, however, such formal suggestion systems are tried, and then interest in them is allowed to flag. Either enthusiasm dies down after the first "ballyhoo" period, or the plan is simply too much trouble to keep up. Thus, in the majority of cases the management research man will be working without the aid of such a formal, active plan, and it is up to him to encourage the offering of ideas by people on the job, especially by the first-line supervisors.

As a matter of fact, in industrial operations, very successful methods-improvement or "work-simplification" programs have been built around the idea of arousing the interest of the workers themselves, and then letting them suggest improvements. Instead of calling upon an expert to time-study and analyze jobs, decide upon the one best way for each, and then impose these methods upon the department, key employees are selected and drilled in the fundamentals of eliminating waste of time, motions, and materials. The employees are then encouraged to offer suggestions for improving work in their departments and, if possible, to do their own building of needed jigs and fixtures, or at least of models of them. Of course, possibilities for improvements will usually have been seen long before this time by the expert conducting the program, but he does not offer ideas of his own until after the employees themselves have come forward with improvements. The workers thus retain the feeling that they are helping to develop better methods. The big advantage is that employees and supervisors are thus trained to think creatively, so that methods improvement really becomes a year-round program.

Because of the nature of his work, the management research executive can be especially helpful in establishing and continuing an employee suggestion system, if one is desired. Being detached from any possible personality conflicts of individual operating departments, he can give unbiased consideration to suggestions. Moreover, he is in a favorable position to determine whether a suggestion made in connection with a specific function in one department can be applied in other departments.

While it is obvious that most good ideas put forward are not new, but usually represent adaptations of some other ideas which proved successful before, it is equally true that it is easy to lose track of good ideas unless (1) a sufficiently complete record of ideas is kept and (2) a periodic review of these ideas is made. What may seem of possible value only in the distant future may become of immediate use because of some new condition. For this reason, it will be helpful to have an "idea record" and to have a person especially interested, as well as qualified, to review it every three months or so.

Distribution of Authority and Responsibility

In the previous chapter we mentioned the importance of precise delineation of authority and responsibility in correcting something that went wrong. All the points made there, of course, operate with even more force in the study of a department or division as a whole.

When an engine is designed, each of its parts is supposed to perform a certain function. If a change in the operation of an engine is contemplated, all the parts which may be affected by the change are naturally checked before it is made. The same care should be taken to check the human parts of an organization when a change in operation is instituted. Their work is correlated, and a specific change may have more far-reaching effects than is at first apparent.

The important general rule to follow is that there should be a specific person responsible for handling a specific type of work, so that all work of the same type goes to the persons with the appropriate assignments. Where this basic principle is not followed, confusion and friction result. One may be surprised that these are not apparent to a greater degree. The answer, probably, is that employees often turn out comparatively good performance in spite of, rather than because of, the thought and guidance given to them. How much *better* their work might be, under proper auspices, remains a hidden loss.

As a matter of fact, organization planning is usually the most neglected phase of management in any company, even in the best-managed, and is worthy of a top place in the management-research docket as a company-wide project. Usually the organization structure of a company has not followed any scientific plan at all, but just "grow'd" like Topsy. Often responsibilities are assigned in the light of conditions of the moment, because somebody seemed to know more than others about a particular kind of problem, even though his regular duties made the additional assignment illogical; or because someone had the necessary time (*at* the time), even though someone else really would have been a better choice; or because somebody had to be kept on the pay roll; or because a job had to be "made" for somebody. And how often is there not a sort of shadowland of authority, where ostensibly someone reports to a certain executive but in reality looks to someone else for his guidance and authority?—or, because he is able and aggressive, has simply gradually assumed the reins himself, in an unofficial sort of way?

In analyzing the work of a department, it will probably be found that a saving of time and work and a reduction of errors will result from segregating functions which require technical knowledge or judgment from those which can be done more or less mechanically and verified at a glance. In some cases this may have the disadvantage of requiring greater skill and longer training on the part of fewer employees, and there may be some loss of flexibility. However, the advantages will usually outweigh the disadvantages. No general rule can be made, and the management research man will have to consider each case individually.

Similarly, broader organization planning will have to be tailor-made to suit the company's operations. The three classic types of organization—line, line-staff, and functional—are not followed exclusively in any company; judicious combinations will have to be made.[1]

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[1] As a matter of convenience, it may be well to include here, as a reminder, the generally accepted definitions of the types of organization mentioned. The following are given by Robert Wray Porter:

"*Line Organization*—Briefly, the line type of organization provides a line of authority, proceeding directly from the highest officer to the lowest employee and stepped down through intermediate supervisors at successive levels of responsibility. The line of authority and responsibility extends directly in from the point where an order originates to the point where the task is completed. . . .

"*Line-staff Organization*—Line-staff organization is used more generally by industrial companies because industrial work is highly specialized. In such an organization, the responsibility of a line division is to supervise

Coordination

Management review of individual functions or units is, of course, only a first step in the study of the performance of a major division or group of departments. As a matter of fact, it may well be the easiest part of the study. The integration of the work of various units, with others either in the same division or in other divisions, is usually the most important part of the whole undertaking. In this connection it is again necessary to remember that a certain amount of conflict as to authority or precedence is only natural, and that it will be overcome only if the cooperative attitude is consistently and effectively practiced and taught by the senior personnel. It is usually not difficult to find an efficient way to handle a given problem. The difficult part is to get the various departments involved to work together properly, in accord with the new procedures. In short, the methods part of the problem is often relatively simple, once the facts are studied—merely the application of common sense. The human-relations part of the problem is never simple, since unwillingness to cooperate, inertia, lack of sympathy with the aims of the study, or

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personnel in carrying out orders. The responsibility of a staff division is to provide other divisions with specialized services, or specifications, which they need in carrying out their line orders. An Engineering Division is a line division when engaged in doing engineering work; it is a staff division, also, because its work (as represented by its designs, specifications, and procedures), determines the work of the Manufacturing Division. A division doing such double duty is known as a line-staff division. . . .

"*Functional Organization*—The functional type of organization is used where functions of a similar character are centralized under a separate authority and where such authority crosses divisional lines. Thus, the Engineering Division could operate as a functional division in charge of inspection. In this case it would be responsible for inspection functions throughout a plant, with sectional inspectors working *directly under its supervision*. . . . The Engineering Division under these circumstances would perform quality inspection throughout the plant, regardless of what divisions produced the work. Other basic functions, such as planning, preparation, scheduling, and production, are sometimes handled in a similar manner." (Heyel, "The Foreman's Handbook," Chap. XVI, McGraw-Hill Book Company, Inc., New York, 1943.)

downright stubbornness will usually be encountered when new methods are to be implemented. The paradox is that the exact reverse is usually the *apparent* condition; determination of the best method seems difficult, and the human-relations phase of the solution is usually not considered worth special study when the plans are laid.

There is no infallible rule as to how differences of opinion between executives of separate units can best be reconciled. The most promising approach, obviously, is convincing logic, and frequently, if enough time is allowed for consideration, an agreement on procedure can be reached in this manner. If, however, the urgency of the situation makes it imperative that the suggested change be put into effect without delay, a possible way to get the change adopted without too much resistance is to suggest that it merely be "tried out," and that final decision be held off until the results of experiment are available for more deliberate consideration. One thing the research man must always remember is that he is a "catalyst," and not a *gauleiter*. Therefore, he should practically never attempt to bring overt pressure to bear. "Cooperation" obtained by duress is obviously a misnomer. Where at all permissible, delay incurred in winning over a dissenter will pay out in the end.

One of the best practical procedures, of course, is to win acquiescence for a way of doing something *before* the plan is formally offered for adoption. This is done by working out the method in consultation with the various subexecutives and department heads involved, and then sitting down with them, before the plan is submitted to higher-ups, to be sure that they will be "for" it. In most cases a higher executive, in passing upon a plan, immediately calls in his key men who are involved, to get their opinion, since they will be the ones to "live" with it. Obviously, if these men have already expressed their concurrence with the ideas—*and especially if they have been made to feel that important parts* *of the plan are really their own ideas*—they will vote for its adoption.

Executives differ widely in their attitude with respect to changes of procedure. Some are inclined to leave a broad range of procedures within the discretion of the departmental or sectional executives who report to them. Others want to know all about any change in procedure, no matter how minor. The usual type is somewhere between these extremes, wanting to know about major changes but letting the heads of individual units make all other changes. It is important that the person making the management study bear in mind the procedure which the head of the department requires his subordinates to follow. If it is not conformed with, resistance of the department head will be inevitable, endangering the entire study and possibly causing personal friction among the heads of individual sections.

Where the executive likes to take part in discussions concerning even minor changes, it is advisable that the presentation of the problem, the findings, and the conclusion be recorded in such a manner that no unnecessary waste of time be incurred in conference. A good idea is to have a draft of a statement on the subject prepared, and to ask the supervisors of the units involved to go over it, so that it will be worded to their entire satisfaction. In this way most of the objections will be either eliminated or incorporated in the report and will not be brought up for the first time when a meeting is held in the office of the higher operating executive.

"Tune-up" Studies

In addition to thoroughgoing general management surveys, it is helpful to make brief management reviews from time to time to see whether specific units are functioning as well as they should. This is comparable to "tuning up" a motor. The method used is to localize a specific function and determine how promptly and efficiently it is being carried out. For example, a record is made of an incoming order which has some unusual requirement, and after it has been completely taken care of, the progress of this order, step by step, is reviewed and compared with the standards.

To an experienced person, even a brief review of performance may indicate points where further checking up might be especially timely. For example, the indices of performance may show a continuous increase in backlog over the established maximum, with average production only equal to the standard, or below it. This usually points to a problem which has been neglected; however, a review may show that the situation came about because of certain new developments which could not have been foreseen or adequately prepared for.

Generally speaking, such brief "tuning up" reviews are especially helpful when they are directed toward certain seasonal operations, to assure, before the season in question has come, that all precautionary measures developed for the prevention of difficulties have been exercised.

Another helpful tuning up review can concern itself with basic objectives and plans. Useful information may be obtained from a review of plans made, say, a year or six months ago, to see what steps have actually been taken toward their completion.

When a general management study is made, it will often be found that a large number of seemingly unrelated improvements are possible. For example, as a result of one study, a major change in customer contact affecting an entire store organization was made, a change in shipping procedure was inaugurated, and a number of other management procedures were either modified or entered on the list of special studies for completion at a later date.

It will be helpful, before entering upon a general management study in a department or division, to prepare ahead of time a check list of things to keep in mind. The following list is a starter. In preparing it, clerical as well as manufacturing operations were kept in mind. Additions can be made to suit individual situations, especially where technical manufacturing operations may be embraced in the study.

1. Are all the functions performed really necessary?
2. Can the same results be obtained in some easier or simpler manner?
3. Are functions performed in the most logical order?
4. Has an effort been made to see whether combining, changing, or splitting up of functions and assignments would be of advantage?
5. Are functions and responsibilities of all employees clearly defined?
6. Is the incoming work reviewed by a person competent to distribute it, so that it reaches those who are supposed to handle it? Is it distributed promptly?
7. Are employees properly trained to understand the purpose of their work, as well as the actual operations they perform? Are they fully aware of the ultimate effects of errors?
8. Are individual employees competent to handle their regular work without guidance?
9. Are check sheets used where feasible, to make certain that every necessary point has been covered?
10. Are standard methods and procedures down in writing?
11. Are there delays in getting necessary approvals?
12. Is checking done promptly? Are there standard methods for checking quality and completeness? Are there unnecessary duplications in checking?
13. When errors occur, are the reasons for them studied as case material for training or for change in procedure?
14. Is there a record of production by individual workers as well as for the unit? Are there wide variations in the work of employees doing similar work?
15. Are there definite standards of quality and tolerance? Are these reviewed periodically?
16. If there is considerable fluctuation in the flow of work, is the personnel arrangement flexible enough to permit handling without bottlenecks?

17. Are records and other reference material kept in such a way as to permit looking up information with a minimum loss of time? Is material taken from files returned promptly?
18. Are inquiries regarding status of the work handled in such a way as to keep interruptions at a minimum?
19. Are there enough people trained for adequate performance to permit normal functioning when employees are absent for any reason?
20. Is there an adequate system of follow-up?
21. When operations or requirements are changed, are they reviewed to see whether improvements are possible?
22. When general instructions are issued, is there a procedure to make certain that all employees, including those ill or on vacation, are notified?
23. When individual employees have a problem, can they get an answer or advice promptly?
24. Are unusual problems taken out of the flow of regular work for immediate attention of the supervisor?
25. When an employee is absent, is his pending work reviewed to pick up items which need immediate action?
26. Does work come into the department in a way which causes unnecessary delay or handling?
27. Are instructions given in the simplest and clearest way, to avoid misunderstandings? Are there points of procedure or policy on which there is a difference in interpretation, and on which clarification is needed?
28. Are employees encouraged to make suggestions? Can employees submit suggestions without disclosing their names until later?
29. Are there any improvements which were supposed to have been made, but on which no action has been taken?
30. Are there definite deadlines by which some phases of the work are supposed to be completed? Are there adequate methods to make sure that certain jobs are not permitted to drift until it is impossible to meet their deadlines?
31. Are errors found by employees themselves reported, or is there a tendency to cover up?

32. Where computations can be made with the aid of a table, are such tables used instead of having employees make individual computations?
33. Is there a definite procedure for noting changes on forms, so that at the time of reordering, all of these would come up for consideration?
34. Is all necessary equipment readily available? Should some manual operations obviously be done by machine?
35. Are requisitions for materials, equipment, or repairs taken care of promptly enough to avoid holdup of work?
36. Does physical layout keep waste motions to a minimum? Are problems of light, air, space, and noise kept in mind?
37. Is there a system of giving credit for temporary transfer of personnel from one unit to another, reflecting decreased personnel costs to the first unit?
38. Is the performance of a unit evaluated, at least partially, from the point of view of total personnel cost and unit cost?
39. Is employee knowledge of work tested in some systematic manner, in addition to discussing errors?
40. Is employee training on a systematic basis, rather than one of "picking up" information by experience on the job?
41. Are new employees introduced to their work and to fellow employees in a way that makes them feel at home?
42. Is there a simple, effective procedure which permits employees to air their grievances with their superiors, rather than merely discuss them with fellow employees?
43. Are there signs of personal friction?
44. When there is a possibility of competitive production performance between separate units doing similar work, is this used as an encouragement of the best possible effort?
45. Are there wide variations in pay of employees performing similar work?
46. Do complaints, both external and internal, reach the appropriate executive promptly?

47. Are performance and salary discussed with each employee at least once a year, at which time suggestions for further improvement in performance are made?
48. When transfer of personnel is contemplated, is the true evaluation of an employee revealed to the unit asking for him, or are unsatisfactory employees given a higher record than they deserve, simply to get rid of them?
49. When an employee does not do as well as is expected, is the problem faced promptly? Is he put on probation or even asked to resign, or is the situation allowed to drag on?
50. Is each supervisor encouraged to train someone as his successor, as a prerequisite to his own advancement to a more responsible position?
51. Are supervisors expected to obey general regulations, or are they allowed to disregard rules applicable to other employees?
52. When conferences or discussions are called, are those asked to attend informed in advance as to the topic and purpose, so that they can prepare themselves for discussion?

CHAPTER X

THE MANAGEMENT RESEARCH PROGRAM

It is normal for an aggressive organization to have a number of important long-range problems "on the docket." Just as an active individual has more things to do, both inside and outside of his business, than the waking hours of a day provide time for, so the management of an active business has more problems than there seems to be time to deal with currently. The only answer is to determine the relative urgency of these problems under current conditions.

While the top executive must, in the end, make the decisions himself, he will find it stimulating to his principal associates as well as to himself to discuss the long-range objectives which are contemplated for study by the management research group. Such discussions will also produce further suggestions of matters which should be put on the agenda for future studies. At the same time, it should be expected that the management research executive himself will continually submit items which seem appropriate for either long-range or immediate study.

Under normal conditions, the management research group should be free to conduct, on its own initiative, studies of specific problems affecting individual departments, and be available for service to individual departments asking for such help. Such problems, being of a relatively minor nature, need not be brought to the attention of the top executive unless the findings are such that they indicate probable usefulness to the entire organization.

This type of operation requires a high degree of judgment, for the more effective the management research work of an organization is, the greater will be the demand for research assistance. Thus, the management research executive may occasionally have a number of studies pending, and at the same time be swamped with requests for assistance. If that happens, it is advisable to discuss with the person making a new request the nature of other, more pressing, studies, to see if he himself will not immediately say that the others should be given precedence. On the other hand, it may be possible to arrange for the securing of certain general data needed for preliminary consideration of the problem, thus not entirely postponing action.

The usefulness of such preliminary information is twofold. Occasionally the data may point to the obvious line of further action, which in itself may not require much work on the part of the management research personnel, except for occasional review of statistical data. Sometimes it may indicate that a minor adjustment would solve the problem. The important point is that no studies should be started and then abandoned before they are really completed. That is by far much more discouraging than not undertaking the study at all.

Management research activities are stimulating to the organization when they are carried on so as to give a certain amount of attention currently to a number of divisions, rather than concentrating on only a few.

With respect to the management research executive's running list of possible studies, it is important that his records indicate why the various questions came up in the first place. It is entirely possible that, when the study is actually made, the person who made the suggestion will expect some form of recognition. When no record is made of the original, and such recognition is not forthcoming, an extremely destructive situation can be created, undoing much of the stimulating influence which management research should try at all times to build up.

Similarly, when it is decided to take a certain item off the list of studies, it is important that a note as to the reason

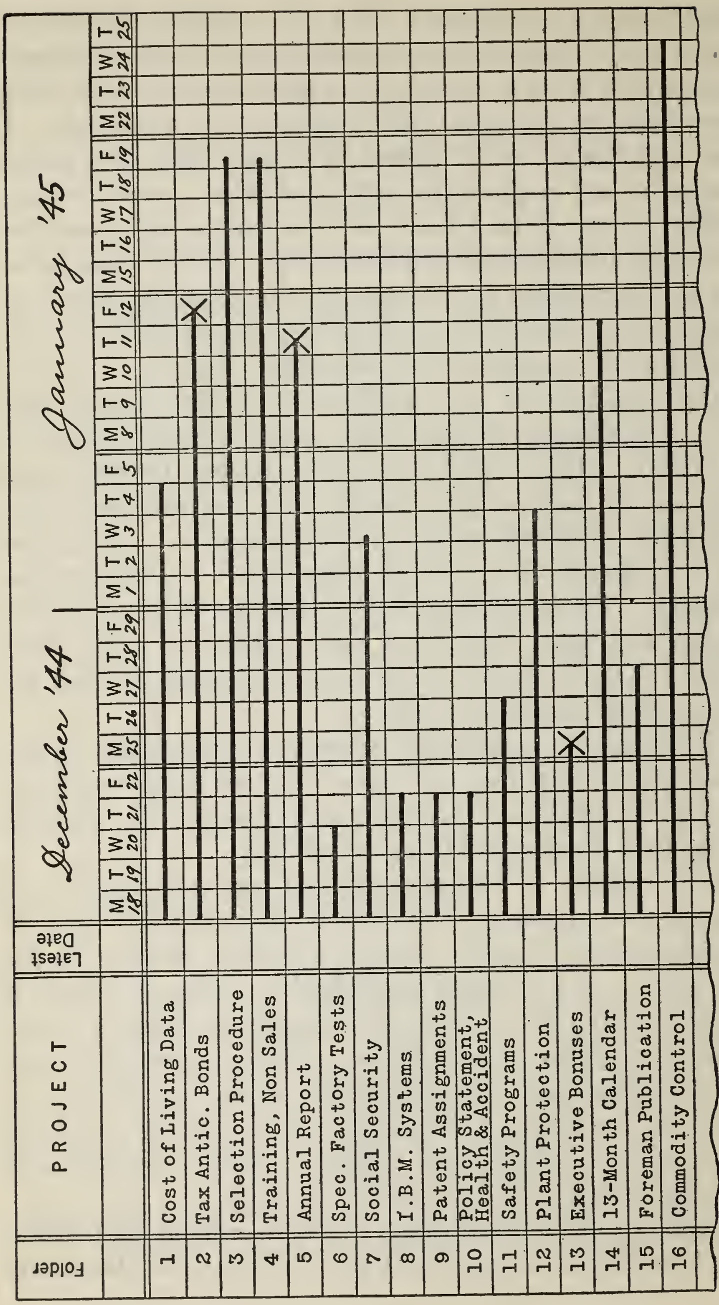


FIG. 13.—Visual control for the research man's own work.

for the decision be made. Problems of the same type will have a tendency to keep cropping up, again and again, after an interval. The first reason for crossing the item from the list may not be valid under later conditions, but a record of it will certainly save time.

In Chap. IV we referred to the advantages of visual control. If the management research executive finds his assignments piling up, it will be well for him to consider setting up an adaptation of a Gantt chart for himself. Figure 13 is an example of a notebook chart that has proved useful in keeping track of a wide variety of assignments. A filing system for each assignment is set up on a numerical, rather than an alphabetical, basis. Whenever a new assignment is undertaken, it is given a folder number and added to the sheet. Each sheet provides space for a running record of six weeks ahead. The horizontal lines show at a glance when work was last done on any particular assignment. The "danger signals" are short horizontal lines. When all of the six weeks on a sheet have elapsed, a cut-off portion of a new sheet, consisting only of the blocked section, is laid over the first one, thus making it unnecessary to retype the column of assignments. The column "Latest date" is provided for entries showing the latest date on which work was done on those assignments on which no work was done for some time before the adoption of this particular chart. A "ledger page" in the remainder of the notebook can be set up for each job, on which special notes and comments can be jotted. It will prove helpful to arrange these ledger pages alphabetically instead of numerically, so that if assignments are truly numerous, there is a handy alphabetical way of turning to a specific one, rather than searching for it in the numerical list on the chart pages.

An "Inventory" of Advanced Management

Since the objective of management research is to keep a company in the forefront of sound management thinking, it will behoove the management research executive to "take inventory" now and then to see which of the recognized advanced management practices are being followed in his organization, and why some are not. Such a checkup may well point to desirable avenues for special studies.

Accordingly, we close this chapter with a check list of advanced management, a sort of composite indicator of the best of what the best companies are doing. A draft of these points was sent to representative executives in leading companies—specialists in various fields, such as production, personnel, and finance—so that a reasonable approach to comprehensiveness could be attained. Arbitrary decisions, however, have had to be made as to which points were to be omitted because they are elementary or routine or already quite common practice. Moreover, points on certain highly specialized functions arising in the management of a business, such as legal or taxation or insurance, are not included nor are matters having to do with financing an enterprise. Finally, the check list is confined to management or directive concepts, and does not embrace purely technical matters, such as scientific research, or details on modernization of equipment.

This check list is, of course, idealized; no one company will want to conform to it in its entirety, and details on certain items would have to be expanded to fit individual situations. In most companies, because of size, type of operation, type of employees, type of ownership and control, and the like, many of the items need not be considered at all. The list should, however, serve as a useful management yardstick. A little research will develop numerous sources in management literature for further reading on any one of the subjects mentioned.

A CHECK LIST OF ADVANCED MANAGEMENT PRACTICE

I. Administration

1. Development of company, industry, and general-economic indices and "danger signals"
2. Analysis of *actual* lines or organization and authority, as distinguished from the nominal ones; development of sound lines of organization, and clear-cut delineation of responsibilities and authorities; putting the organization plan on paper in the form of an organization chart or manual, and provision for a regular review through an organization planning or research unit with top management backing
3. Development of a statement of long-term company objectives, and plotting out basic lines of investigation bearing upon them
4. Use of committees, carefully selected, as a means of coordinating administration activities

II. Personnel and Industrial Relations

1. Comprehensive job analysis, for
    - *a.* Use with a job-evaluation and employee merit-rating program, in the development of a scientific wage-payment plan
    - *b.* Use with job specifications in selection and promotion
    - *c.* Job breakdowns in developing job manuals and training programs
    - *d.* Use in drawing up promotion charts, showing logical promotion sequence from one job to another
2. Job tests, and aptitude tests and other psychological and psychiatric tools, for
    - *a.* Over-all selection
    - *b.* Specialized duties in connection with placement and promotion
3. Careful planning of the interview for selection, placement, difficulty adjustments, and exit
4. A formalized induction procedure for new employees (orienting the new employee may well include written and oral data on company history, products, and policies; a

trip through the plant; and introduction to the persons with whom the new employee will work)

5. Organized training programs; supervisory and job training; use of training manuals, job breakdowns, and other forms of standardized instruction; use of motion pictures and sound-slide films in training
6. Periodic detailed discussion of the employee's rating with him
7. Development of personnel manuals and written statements of labor policies
8. Periodic checkup to see if union contracts are understood by the supervisory group
9. Use of employee counsellors—people to whom employees can talk with the knowledge that something may be done about their problem, but that in no case will what they say be used to their disadvantage
10. Organized safety programs; development of safety manuals with the help of employees on the job; adequate first-aid facilities; good heating, lighting, etc.
11. Organized employee recreation, and recreational facilities
12. Employee cafeteria; help and advice on employee nutritional problems
13. Group insurance and employee benefit plans—sickness, death, old age, unemployment, hospitalization, severence, employee loan service
14. Adequate personnel records, including statistics on turnover, absenteeism, accidents, etc.
15. Formalized, liberal, vacation and leave-of-absence policy
16. Employee suggestion system
17. Employee publication

III. Production

1. Development of production standards and standard costs; periodic discussion meetings of department heads to analyze reasons for variations from standards
2. Use of visual controls in planning and scheduling work
3. "Work simplification" programs, to assure continuous awareness of the "why" of operations, and to assure performing them with minimum motions and materials; use of motion- and time-study techniques

4. Analysis of plant layout for best utilization of space, location of service facilities, etc.; use of flow charts to examine internal travel, transportation, and handling to provide best plant layouts
5. Scientific inspection procedures; use of statistical techniques
6. Programs for dramatizing quality and control of waste to employees
7. Scheduled inspection and maintenance of equipment and facilities; development of maintenance budgets
8. Periodic studies of all paper-work routines (in recent years, paper work has crept into production processes to the point where the ratio of nonproductive labor to productive labor has increased enormously)
9. Formalized procedure for review of new equipment, and its possible application
10. Formation of factory "councils" or boards, composed of executives and department heads, for "consultative management" (see Chap. XIII)

IV. Sales, Marketing, and Advertising

1. Sales forecasting and sales budgeting; development of economic information as yardsticks for sales forecasting and performance
2. Development of statistical information on the sales performance of the company's products against competing brands
3. Use of consumer panels for pretesting of new products and checks upon existing products
4. Use of test stores or other devices for sales testing of new or changed products, preevaluation of displays and dealer helps, etc.
5. Development of procedures for accumulating *promptly* sales data for analysis of performance and potentials by classes of accounts, territories, products, sizes, and the like
6. Liaison between sales and production, to iron out production peaks wherever possible, and to take full advantage of by-product possibilities and new-product ideas
7. Periodic analysis of packaging, from point of view of shelf appeal in competition with scores of other products, convenience of use by customer, efficacy as a container, etc.

8. Study of salesman turnover; use of special aptitude tests and other selection procedures for the sales force (organizations having large sales forces may find it advantageous to have a separate sales personnel section)
9. Sales training and salesman-development programs
10. Adequate procedure for handling customer complaints, and for analyses of them to prevent recurrence

V. Financial Control

1. Coordination of departmental budging work, and development of over-all budgetary control for *a.* Sales *b.* Production *c.* Plant and equipment *d.* Purchasing *e.* Administration *f.* Personnel budgeting when advisable
2. Periodic, well-organized inventories, with an adequate system to control supplies and equipment between inventories
3. Periodic checkup on the adequacy of insurance coverage.
4. Periodic analysis of working capital position, and probable future requirements, to determine *a.* future needs for cash *b.* dividend policy for Board of Directors
5. Study of financial markets to test adequacy of the company's present financial structure
6. Analysis of all activities and expenditures from the standpoint of tax effects, and provision in the organization for centralization of tax work
7. Preparation of annual and periodic reports in a form to be intelligible to stockholders and employees through the use of charts, illustrations, interpretations in nontechnical language, etc.

VI. General Office

1. Establishment of production standards wherever possible; especially, establishment of standards of promptness in dealing with current matters
2. Procedure manuals for branch offices
3. Review of office supervisory methods, and establishment of training methods for office supervisors (to bring the office, in this respect, up to the plant's foreman-training methods

4. Periodic review of office forms, to take advantage of possible modernization or revision for economies in production and use
5. Examination of centralized operations, to see whether centralization has gone so far that operational difficulties are encountered
6. Establishment of scientific filing procedures; systematic review and destruction of obsolete records in accordance with a formal record retention schedule
7. Application of "work simplification" and motion- and time-study thinking to office operations, to save motions, steps, material, or the time of other departments
8. Analysis of methods in the light of modern equipment, to see whether certain manual operations should be done automatically; periodic review of equipment newly placed on the market for possibility of laborsaving use; regular examination of equipment to avoid reduction in "turn-in" values because of obsolescence
9. Periodic review of all statements and reports to see whether some should be eliminated, combined, or reduced in distribution
10. Formation of office "councils" or boards, composed of executives and department heads, for "consultative management"
11. Scheduled talks by the office manager with individual employees

VII. Purchasing

1. Use of market forecasts for advantageous placing of orders
2. Standardization of items and written specifications to prevent avoidable variations
3. Periodic examination of standards of quality and other specifications to reduce possibly excessive requirements
4. Physical laboratory or testing facilities for the development of purchase specifications as well as for testing incoming materials and supplies
5. Use of "contract orders" under which the supplier is authorized to have at all times a definite quantity of materials or supplies in stock to be drawn against, the

supplier storing the bulk of such materials and thus decreasing the storage problem

6. Use of blanket contracts with price adjustment clauses
7. Analysis of usage, so that related orders can be combined and placed at longer intervals, instead of a larger number of separate purchases of individual items, requiring separate bids and separate handling
8. Periodic checks with suppliers, to see whether changes can be effected in specifications which would permit decreases in their costs, with corresponding decreases in prices
9. Maintenance of multiple sources of supply, particularly for key items, to guard against the failure of any one
10. Adequate procedure for prompt payment of bills, to permit taking advantage of all trade discounts and, where possible, "anticipation discounts"; periodic review of terms

VIII. Receiving and Warehousing

1. Establishment of minimum stock on hand for automatic reorder, in conformity with possible seasonal variations
2. Periodic review of procedures to improve inventory control and reduce paper work to a minimum
3. Review of slowly moving stock to permit intelligent disposal of obsolete items
4. Examination of layouts and usage, to keep handling at a minimum in the distribution of materials and supplies to consumption points
5. Adequate marking of lots, so that purchase order and supplier can be determined readily
6. Advance planning for special space required by seasonal peaks
7. Requisitioning procedure which permits adequate control but reduces paper work to a minimum

IX. Packing and Shipping

1. Periodic analysis of shipping containers and packing and shipping methods, in the light of technical developments
2. Development of sound traffic methods; analysis of warehousing and distribution centers from the point of view of customer service and transportation rates

Part Two

SOME CASE EXAMPLES OF THE SYSTEMATIC SOLUTION OF MANAGEMENT PROBLEMS

In Chap. I, we emphasize that this book was designed to develop a pattern of thinking, rather than to tell just how specific management problems were analyzed and solved. However, it is felt that certain widely diversified examples will serve to bring to life the principles discussed. More important, they will illustrate the fact that formalized rules of thinking are applicable to every field of management: stating problems clearly and basically; breaking big problems down into subproblems and tackling them in the right order; developing formulas; organizing for action; and arranging for follow-through and checkups.

CHAPTER XI

MAKING A GENERAL MANAGEMENT SURVEY IN A HIGHLY SPECIALIZED DEPARTMENT

This example shows how the operations of a highly specialized division of a large concern, dealing with the preparation and revision of contracts, were reviewed. While this group included only about thirty employees, it can serve as an illustration of typical problems and typical attacks for solutions. The origin of this study was not a complaint or any definite indication that something was wrong, but rather the feeling that the time required for completion of the work was greater than it should be. Another "feeling" was that, because of occasional delayed action on contract modification, more positive control was needed.

Accordingly the study did not start with specific objectives, but it was understood that, as needs for improvement became obvious, action would be taken immediately. The best "statement of the problem," therefore, would be, *Study Department X to see whether the work can be done more efficiently, make recommendations for changes where necessary, and, upon approval, put your recommendations or suggested modifications of them into effect.*

Department X deals with three types of work: (1) preparation of new contracts, (2) changes of contracts involving additional business, and (3) changes of contracts which modify minor provisions but do not involve additional business. These three functions formed the logical basis for the problem breakdown.

The study was begun with the section dealing with the preparation of new contracts. Three types of employees were attending to this work—junior employees, who prepared the original drafts of contracts; senior clerks, who reviewed the work of the juniors and improved on it; and "checkers," who either approved the work or returned it for changes or corrections.

Most of the juniors had their own reference material, collected as a result of their previous work on cases, although some standard reference material had been provided. Their method was to select from such material the sentences which in their opinion best fitted the particular contract, and then to submit it to the seniors. Before these drafts of contract requirements could be prepared, the juniors had to read all the correspondence on the case.

From discussions with individual juniors, it became obvious that the material submitted to them for review included correspondence which went so far into the past that it had no actual bearing on the contract in question. However, not only did the juniors have to look over this entire material, but, subsequently, the seniors and checkers followed the same procedure.

Therefore, a change which was put into effect within the first few days of the study was to arrange that the preliminary review of the correspondence on a case be made by a senior clerk instead of by a junior. It was then the senior's duty not only to eliminate from the file all material going too far into the past, but also to mark clearly with a colored pencil the correspondence left in the work file, indicating the portions having reference to the contract in question. This improved procedure did away with repeated reading of irrelevant material.

Experienced employees were assigned to the task of compiling all standard statements which might conceivably be incorporated in a contract and of arranging them so that the ones to be used in a specific case could easily be found by the juniors. Since the actual typing of the contract was done by typists in a separate unit, it was arranged that, whenever a standard paragraph could be used, only the number of that standard paragraph be shown, the contract typists actually transcribing the wording.

A time study was made, which indicated that the juniors spent a considerable amount of time (over 10 per cent of the total) on "discussion of the case" with seniors and checkers. It was therefore arranged that, by gradual transition, the review and direction of the work be more and more centered with the seniors, who would specifically indicate what material had to be typed. In other words, the work of the juniors, except when a departure was desirable for training purposes, was made more and more routine, with less and less judgment required. This change was particularly beneficial in view of the need, at the time, to expand the department during a period of seasonal increase in work.

In the past, the work of an employee was directed to any one of several checkers. Since this prevented continuity in training, it was arranged that the same person would always review the work of the same group of employees. Furthermore, in the past the determination of which employee was working on a given contract required a review of lists, or asking each person in turn, "Are you working on the X.Y.Z. case?" A simple visual control eliminated this particular waste of time and energy.

The difficulty of the section dealing with changes in contracts was primarily due to the fact that the contracts which were being amended were variously worded, and thus various standard contract forms had to be handled on an individual basis. The modification of these contracts therefore frequently represented individual "tailor-made" jobs, and the opinion of the senior and the checker had a great deal to do with the wording of the amendment. It was also found that, because of human-relations factors, the work of some of the employees was being passed upon with a peculiarly critical approach, and what was found satisfactory in some cases, in others was returned for corrections. This not only resulted in tension but also created confusion, for employees did not know what procedure to follow. In one instance, a specific wording would be approved as correct; in another, identical with the first, different wording would be asked for.

An assignment was given to the principal checker to find a formula which would permit the handling of different types of contract forms on an identical basis. At first it was thought that this approach could not produce a standard method; but it was soon found that a limited number of variations could be established to take care of all the basic types of contract modifications. What is more important, it was found that they could be described so simply that even a person with limited experience could quickly find which particular approach should be used.

Incidentally, during this study, it was found that a certain type of contract modification, which was being used in recent years, technically eliminated the most important provision of the contract, although no one was aware of the fact.

The confusion and uncertainty as to how a specific problem should be dealt with resulted in an inordinate amount of employees' time being spent in discussion. Standard paragraphs and a graphic form of determining which of these paragraphs were applicable in each specific case practically eliminated this sort of waste. The same visual control as already mentioned was used in the assignment of cases in this division.

The difficulty with the cases belonging to the third group —changes of a minor nature, not involving additional business—was primarily due to the fact that, when the number of other contract changes was high, these were set aside as less important and were neglected for a comparatively long time. Before the study was undertaken, the balance of unfinished cases reached 140 at peak operations. By the time a delayed case received attention, the details were forgotten and the entire correspondence had to be reviewed all over again. There was no control indicating what type of contract modifications were pending.

The solution of this problem was found in assigning this type of contract change to a small group of specially qualified employees. The back list was gradually reduced, so that eventually it represented, on an average, only five cases, or about one day's work.

There were additional changes of various types, but those described above, including the establishment of a daily control of receipt and release of work, represented the more essential and far-reaching changes.

To summarize, as the procedure stood before the study, each contract was handled five times:

1. Junior clerk: review and preliminary draft
2. Senior clerk: directing the junior
3. Junior clerk: final draft
4. Senior clerk: checking
5. Checker: approval

For each correction, both the senior and junior clerk were involved. Under the final procedure, the contract was handled four times:

1. Senior clerk: review and instructions to junior clerk
2. Junior clerk: typing the material as instructed
3. Senior clerk: checking the work
4. Checker: approval

What is possibly even more important, the junior clerk no longer needed to guess or try to find out what to do, since specific instructions were given as to the handling of the case. An indirect loss of time under the old procedure was caused by the fact that, when the junior clerk did not know what to do next, and the senior clerk was busy explaining some matters to another junior clerk or was otherwise occupied, it was necessary for the junior to mark time.

Moreover, under the changed procedure, the junior clerk no longer needed to review the correspondence, since all the necessary review was completed by the senior. Promptness in dealing with cases also resulted in better recollection of important points.

A number of relatively minor changes in procedure were also made, which materially contributed to work simplification. These included

1. Combining information on various forms, so that fewer forms were needed
2. Establishing a complete check sheet, embracing some 80 different items, arranged in the order in which they should be checked, instead of depending on the memory of employees
3. Arranging that all items of correspondence which have a particularly important bearing on the contract be so conspicuously marked that they could be found easily
4. Simplification of communications of inquiry (Duplications of copying information were eliminated by providing extra copies of certain memoranda.)
5. Simplifications in the contracts themselves, which did not affect the performance under the contract, but which reduced the time needed for checking
6. Eliminating the typing of one set of contract summary by having the final set drawn from the beginning and modifying it when necessary
7. Prepunching the holes in forms which had to be filed with each case, so that each clerk would not have to do it individually
8. Simplification of methods for making certain calculations

Two years after the study there was occasion to review the work of Department X. Practically an identical amount of work was being done by a personnel some 20 per cent fewer, with considerably fewer employees of long experience, and without recourse to overtime. In the past, overtime had been a standard procedure at peak seasons. What is more, work progressed much more smoothly, delays occurred as an exception, and the organization was incomparably more flexible.

CHAPTER XII

AN EXAMPLE OF SYSTEMATIC THINKING APPLIED TO EVERYDAY PRODUCTION PROBLEMS

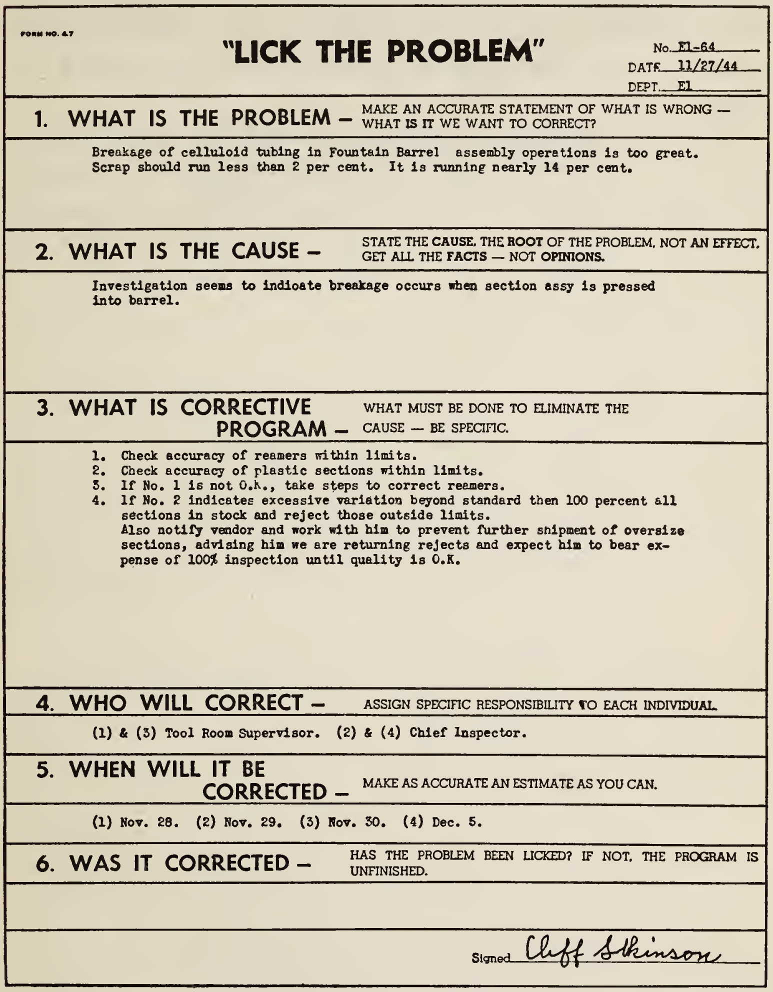
By L. Clayton Hill

Works Manager, Eagle Pencil Company, Inc.

This example of the specific application of formalized thinking was presented at a meeting of the Society for the Advancement of Management conducted by the authors. The general subject was "How to Think about Management Problems," and the check points given on page 73 *were presented for dissection by practical-minded executives. Note how Mr. Hill's points, developed independently, parallel the points given in Chap. V. The authors acknowledge here that it was Mr. Hill's sound insistence upon getting at causes that led to the explicit inclusion of that point under "I" in this book's check list, instead of relying upon implication.*

A practice quite generally followed in factory management is to conduct periodic meetings of department heads, where operating problems are brought up for discussion, misunderstandings between departments ironed out, working schedules assigned, and the like. At such meetings, one of the most trying problems confronting the works manager, superintendent, or other executive in charge is to keep the discussion *specific*—to nail problems down properly when they are brought up, to get at the underlying causes, and to assign definite responsibilities for solution and follow-through.

To achieve these ends, we at Eagle have adopted the slogan "Lick the Problem" and make use of a special form (Fig. 14) which has proved extremely effective in carrying out the slogan. Strong emphasis is put on the correct statement of the problem in the first place, together with an indication of underlying causes.



FORM NO. 47

"LICK THE PROBLEM"

No. E1-64
DATE 11/27/44
DEPT. E1

1. WHAT IS THE PROBLEM – MAKE AN ACCURATE STATEMENT OF WHAT IS WRONG — WHAT IS IT WE WANT TO CORRECT?

Breakage of celluloid tubing in Fountain Barrel assembly operations is too great. Scrap should run less than 2 per cent. It is running nearly 14 per cent.

2. WHAT IS THE CAUSE – STATE THE CAUSE, THE ROOT OF THE PROBLEM, NOT AN EFFECT. GET ALL THE FACTS — NOT OPINIONS.

Investigation seems to indicate breakage occurs when section assy is pressed into barrel.

3. WHAT IS CORRECTIVE PROGRAM – WHAT MUST BE DONE TO ELIMINATE THE CAUSE — BE SPECIFIC.

1. Check accuracy of reamers within limits.
2. Check accuracy of plastic sections within limits.
3. If No. 1 is not O.K., take steps to correct reamers.
4. If No. 2 indicates excessive variation beyond standard then 100 percent all sections in stock and reject those outside limits.
   Also notify vendor and work with him to prevent further shipment of oversize sections, advising him we are returning rejects and expect him to bear expense of 100% inspection until quality is O.K.

4. WHO WILL CORRECT – ASSIGN SPECIFIC RESPONSIBILITY TO EACH INDIVIDUAL.

(1) & (3) Tool Room Supervisor. (2) & (4) Chief Inspector.

5. WHEN WILL IT BE CORRECTED – MAKE AS ACCURATE AN ESTIMATE AS YOU CAN.

(1) Nov. 28. (2) Nov. 29. (3) Nov. 30. (4) Dec. 5.

6. WAS IT CORRECTED – HAS THE PROBLEM BEEN LICKED? IF NOT, THE PROGRAM IS UNFINISHED.

Signed Cliff Atkinson

FIG. 14.—Special form developed for systematic attack upon production problems.

Now, when someone raises a question or complains about something, he is not permitted to take up the time of the meeting in generalized complaint or discussion. He is handed one of the "Lick the Problem" sheets and requested to get his problem down in writing, with as much preliminary thinking through as possible as to cause, possible corrective program, and who should do the correcting and when.

The filled-in parts of the form illustrated (actual size is 8½ by 11 in.) show how a typical problem was handled. The reverse side of the form is ruled off for a Report of Progress, with entries initialed and dated. Thus the form, when filed, provides a ready case history of how the problem was handled.

CHAPTER XIII

"CONSULTATIVE MANAGEMENT" IN FACTORY OPERATION

By F. W. Stein

Vice-president, Manufacturing, The Standard Register Company

Mr. Stein was one of the earliest champions of factory and office councils and boards. His point is that men carry into action best that which they have had a part in forming. "There should be a procedure," he maintains, "whereby all problems which concern the operation of the factory can be discussed with the supervisor or foreman. You can call this consultative management, multiple management, factory council plan, or by any other name; but whatever you call it, it is just good business."

Most policies made by top management without consultation with the foreman or supervisor are unrecognizable by the time they reach him. How then, if it is difficult or even impossible to interpret these policies to foremen, can they in turn hope to do any kind of job in interpreting those policies to their men?

Company policies must be made, or at least defined or interpreted, almost daily, and the foremen must have a hand in their making if they are to be properly interpreted and applied. This applies to virtually all rules, regulations, and important decisions which affect the plant as a whole and which are usually made by management.

Today we have with us problems of absenteeism, quality control, training programs, waste reduction and control, man-power requirements, methods improvements, costs, accident prevention, material problems, multiple-shift operation, unions, cutbacks, reconversion, rehiring of veterans, and so on, ad infinitum. On problems of this type, management should consult with foremen and supervisors. After careful analysis and discussion, there should result a joint agreement on what is to be done about them.

The foreman also deserves to be kept informed by top management on other phases of the business, such as volume of business on hand, tax problems, the competitive situation, new products, sales promotion, and the like. Of course, he need not be consulted on these problems, but it is just good business to have a top executive take a little time off occasionally to tell him about these things, so that he will know more about the business as a whole and thus be a more intelligent foreman.

After many years of experience in plant management, I came to the realization that an entirely new approach to the problem of managing was necessary. The formation of our Factory Management Council about seven years ago was the result.

The following few basic principles are the guiding ones in the operation of this council:

1. Men carry into action best that which they have had a part in forming.
2. Two heads are better than one.
3. Foremen should be kept informed; more foremen fail from lack of information than from lack of ability.
4. Along with *participation* in management goes *responsibility*.

Since no one can hope to get intelligent discussion and come to sound decisions if the group is not well informed on the subject, and since men must first learn the techniques of handling a meeting and thinking collectively, we began an intensive training program two years before the formation of the council. All members received basic training in conference leadership. Instead of the usual series, we conducted several. This taught them to organize a subject for presentation, talk to a group, and think on their feet.

We augmented this with a course conducted by an outside specialist which taught them to plan, organize, coordinate, seek competent counsel, and the like. This was followed by a very practical course in applied psychology, using the conference method.

We were now ready to begin the formation and operation of our Factory Management Council—our "Factory Board of directors."

Briefly, this council is a plan to manage more cooperatively. It provides an avenue for frank discussion of our business position, relations with our customers, improvement of the product, the delivery situation, costs and prices, relations with employees, and so on down the gamut of problems that beset those whose job it is to manage a business enterprise.

Included in the council are all our factory department heads, the chief engineer, and the chief chemist. As head of the manufacturing division, I am the chairman, and the burden of keeping it active rests on my shoulders.

How We Operate

Problems are presented to the council by any of the members. Since I am in touch with top-management problems such as incoming business and costs, I bring these up.

Discussions are full and frank. If many details are involved in a particular problem, a committee is appointed to get the facts and report back to the council, and the chairman discusses his committee's findings and recommendations. So far we have had about 75 committees, a few of which are permanent. If the council decides that the problem can best be solved by the conference method, someone is assigned to lead the conference.

It is important that we keep posted on what others are doing about specific problems of management, and what new theories of management are advanced. Sources of such information are books, pamphlets, magazine articles, and the like. Our Book and Magazine Committee selects these for our Management Library. Frequently some are reviewed by a member, and a discussion follows as to the value of adopting any of the ideas expounded to our own operations. We get much valuable information from the American Management Association *Proceedings*, National Industrial Conference Board reports, *Management Review*, *Personnel*, *Factory Management and Maintenance*, *Management Information*, and many other sources.

A review of any of the above is never resorted to unless it will be the means of stimulating the thinking of our members, or unless we are considering adapting the principles to our own operations.

While our council meetings can be considered a continuous training program, our Educational Committee has sponsored special training programs for the members on such subjects as Time and Motion Study, Applied Psychology, the T.W.I. courses, and Work Simplification. These are not conducted, however, during the meetings of the council.

We keep our members posted regularly by means of large charts on such matters as orders received, business on hand and shipments, average weekly pay roll, per cent of pay roll to shipments, overtime in hours and money, raw materials and finished goods inventories, and over-all plant budgets.

We also try to keep everyone posted on the "goings-on" in Washington, War Labor Board decisions of particular interest, and so forth. Sometimes these are brought up at our meetings, and at other times they are issued on our "Notes and Quotes" bulletin, as are other published items of interest.

We make it a point regularly to have the heads of our office, sales and advertising departments discuss such things as our sales position and competition, sales promotion plans, customer relations, and taxation. For example, at one meeting our sales manager presented our new sales program to our council just as it was presented to our regional sales managers.

Our council also selects the men to send to meetings of the National Safety Council, Foreman's Club Convention, and similar meetings, and they must, on their return, submit to the council a report of the proceedings.

We meet each Monday morning at ten for two hours—no one is excused without my permission, and the meetings are very informal and fast moving. Minutes are carefully prepared on special forms and filed by each member in ring binders, one for each year. Minutes of all committees are likewise prepared and issued to all interested.

A perusal of the seven volumes of our council proceedings, or a glance through the index, would reveal that there is not a phase of management that we have not considered many times. These volumes are a storehouse of information.

Let us look at a few of the subjects, and the number of references made to each.

Aptitude Testing	10
Absenteeism	21
Advertising and Sales Programs	30
Medical and Accident Prevention	77
Operating Expenses and Budgets	Too many to count
Cafeteria and Food Service	12
Business Conditions	21
Special Committee Reports	Hundreds
Costs	Hundreds

Also Discipline, Exit Interviews, Educational and Training Programs, New Product Developments, Methods Changes, Induction Procedures, Employment Policies, Job and Merit Rating, Labor Relations and Union Activities, and so on.

We have another group which we call our Factory Round Table, which is essentially a Junior Factory Management Council. It consists of assistant foremen and other key men who meet each week and discuss somewhat the same problems. All these men have had extensive training before being admitted to the group. They are also doing an excellent job.

We have carried this idea of consultative management even further. In addition to the meetings a supervisor regularly has with his assistants to discuss departmental problems, we also call in small groups of workers selected by the supervisor to discuss departmental problems.

Does all the foregoing pay? Are we getting results? The answer, after these many years of managing on a cooperative basis, is, "Decidedly, *yes!*" As I review our operations and the many problems which have confronted us over this period, I do not know how we could have managed otherwise.

CHAPTER XIV

MANAGEMENT RESEARCH APPLIED TO DISTRIBUTION

By Fenton B. Turck and William E. Hill

Messrs. Turck and Hill have long been advocates of scientific methods in distribution, claiming—and rightly—that the field of distribution has not been broadly subjected to the engineering study and analysis that have been so successful in the field of production. The term "distribution" here used covers all the processes involved from the time a product leaves the factory to its sale or delivery to the consumer. . . . The authors of this chapter have pioneered in the work done on this subject by the American Society of Mechanical Engineers, and the chapter itself is based on a paper, "Scientific Methods of Distribution," published in the Society's Mechanical Engineering *for March,* 1944, *and on principles further developed in a major session on distribution conducted by ASME in November of that year.*

Twelve principles of scientific distribution are highlighted in the pages that follow. Each principle is exemplified by actual application in a leading industrial company. While company names have been omitted, it should be remembered that each of the twelve reports covers the actual experience of a well-known company. All of the methods described have paid off in lowered distribution costs. In eleven out of the twelve examples, the principles described have been in use for more than fifteen years.

Obviously, methods must be modified to suit conditions, but those described here can be applied to all business, whether large or small.

I. Customer Development

To most businessmen, "selecting the customer" merely means that the sales manager keeps in general touch with the trade, through his salesmen and his distributors. In the case of this company, an intimate knowledge of every customer, *derived from engineering data*, has been the basic source of corporate policy decisions for more than forty years.

A chaotic price condition for all their products forced the management of this corporation over forty years ago to choose between "price" or "quality" as a business policy. The management chose quality.

This choice was predicated upon the ability of the company to use reductions in operating expenses of its customers as a means of taking the emphasis off immediate cost. Operating economies, for customers, through correct selection and adaptation of the company's products were the basis for developing a quality market. With growing acceptance of this basic idea by customers, a unique and highly profitable business was developed.

The importance of a complete "knowledge of customers" is demonstrated by the fact that 60 per cent of the man-hours of the *sales organization* are spent in obtaining knowledge of the company's customers and prospects. The files maintained on accounts contain from 40 to 500 pages of detailed information per customer. An average of fourteen months is required to gather essential information before the company feels it has a true understanding of the customer and his needs.

The procedure of obtaining knowledge of customers is as follows:

1. Every prospect is analyzed *before* he is solicited. Neither direct nor indirect sales activities are allowed to start until a detailed survey is made to determine the annual consumption by the prospect of the several types of products manufactured by the corporation. If no chance for mutual profit is indicated, the prospect is not solicited.

2. Where possible, information is obtained in the plant of the prospect as to competitive sources used for the current supply of each type of product.
3. At the home office, a thorough analysis is made of the organization setup of the prospect, with the addition of such corporate information as is necessary to have a full working knowledge of its business, policies, and direct and indirect affiliations with competition, in addition to the usual analysis of banking and trade affiliations.
4. With this background information, a suitable procedure for the sales force is developed.
5. Upon receipt of the first order, a record of dollar-and-quantity volume of sales of company's varied products is set up. Such a record is maintained for each of many thousands of customers.
6. Dollar-and-quantity volume of customers' purchases from competition are also included in the customers' record, when obtainable.
7. Thus, cumulative figures on purchases by the customer from the company and from competition are on record, and these figures are carefully analyzed to show business received and business lost to each competitor.
8. The relation of business received to that of each competitor is used to determine frequency of salesmen's calls, the need for special service, and the strategy of following up each customer.
9. Checks on the relative efficiency of the salesmen in each territory are obtained by compiling and composing customer data already described.

The company's operating profits have been maintained at a high level since the adoption of customer development as its major tenet in distribution procedure. This is a direct result of the fact that the company obtains an average of 37 per cent of its customers' business, as contrasted to the 10.4 per cent which an authoritative investigation showed to be high among competition.

The advance spending for facts hammered down the final cost of distribution.

II. Corporate Accounts

In the minds of most people, selling means a sale made by an individual to an individual. This concept of the sales relationship is unfortunate, if it results in neglect of the economies and stability that are inherent in the corporate account. The *personality* of a corporation does exist. We know it by such words as good will, corporate policy, organization.

Every corporation has a number of steady repeat customers. These old reliables are the result of the fact that the management of one company knows and respects the other and consciously or unconsciously gives first consideration to the goods or services of these permanent customers. In a number of instances detailed costs have been developed which have directly shown the desirability of such established corporate accounts.

In one company the selling cost per dollar of sales for corporate customers is one-tenth of the over-all selling cost of "here-today-gone-tomorrow" business of the same company. The relative stability of the corporate accounts is a great asset.

In 1928, the management of this corporation became thoroughly convinced of the advantages of corporate accounts and made plans to build up this type of business. In three years, through a concentrated effort by the management, 60 per cent of the company's annual sales volume was on a corporate-account basis. One account, which yielded $26,000 per year when the plan was started, grew into a corporate account representing a consistent business of $300,000 per year. Many other accounts showed similar relative progress.

The following were the principal tools used by this corporation to establish its corporate accounts:

1. A wholehearted decision to concentrate on the cultivation of corporate accounts. This policy sustained the neces-

sary investment in talent and effort required of mangement and operating forces

2. A six months' review of all important sources of business with the objective of selecting the most desirable repeat customers
3. A careful analysis of each account to determine the obstacles that had to be met in order to convert the customer or prospect into a corporate account
4. The matching of these obstacles with what the corporation could offer on an organized basis, such as engineering assistance; mutual exchange of business; design or adaptation of product to meet specific requirements; cooperative promotion of product; warehousing; delivery or service innovations giving new competitive advantages to the customer; financial or credit assistance
5. Complete selling coverage by management and operating personnel in order to assure a thorough knowledge of the product and service requirements of the account
6. Where the long-term advantages appeared to justify the effort and expense, treating each account as an individual distribution objective
7. Adjustment of the sales organization so that particular individuals serviced the account in any part of the country regardless of sales territories
8. Cooperation of all departments of the corporation in the establishment and maintenance of each corporate account.

Stabilized sources of business can be developed through systematic research procedure. The result is repeat customers with economy and lowered costs of distribution.

III. Stabilizing Demand for Capital Goods

The year 1932 was fearsome for manufacturers of major equipment; 1933, in most cases, was little better, if not worse.

Surprisingly, one manufacturer of plant equipment reported here made a profit in 1933, a year of extremely low industrial production. Furthermore, throughout the depression, this company paid at least a partial dividend every single year.

Its plans had been laid well in advance of the 1929 break—perhaps 25 years before that time. Purchased in 1894 in bad financial condition, the company had the blessing of new management, around 1900, which recognized the importance of stabilizing, as far as possible, the demand for its capital goods. There was no economic misconception of the susceptibility of this industry to general business conditions and the relative inelasticity of demand for their products. Rather, this management was realistically aware of the "feast-or-famine" characteristics of its business, to the extent that it did something about them.

For years it had built the business, customer by customer, corporate account by corporate account, to establish a primary relationship with the small number of well-financed and diversified accounts in its highly concentrated market. It staffed the organization with the most capable men in its field and pursued a rigorous policy of management control to present the most effective engineering-trained negotiators to handle the multiple purchasing influences in its direct sales with its customers. Furthermore, it diversified its lines with companion products.

On this rock base, the company systematically sold its major accounts a new habit of buying their major plant equipment. Each customer was sold on budgeting its specific requirements at least a year ahead, instead of spot buying. In certain cases, customers were sold on programing purchases as much as five years ahead. This crystallization in the customer's mind of the necessity of planning and budgeting ahead its equipment purchases has the effect of setting up, in good times, business that will not totally disappear in bad. To facilitate this procedure, the company's sales engineers do the following:

1. Study the customer's manufacturing, engineering, and purchasing departments, according to an organized selling plan; familiarize themselves completely with the personnel and with the equipment needs and the operations of the account

2. Create an understanding of obsolescence in equipment by showing customers how installation of new equipment would create savings in production costs
3. Build executive support in the account for advance budgeting of equipment through a departmentalized top-management coverage procedure

In 1932 and again in 1938, this policy paid off. Instead of abandoning all equipment purchases, its loyal, well-diversified, and well-financed customers continued to place some orders, however small, as a result of their advance-budgeted programs.

Planned budgeting of customers' future requirements will help to stabilize the "feast or famine" characteristics of a capital goods business.

IV. Marketing Budgets

Accurate forecasting of the volume of business that may be anticipated is essential to the sound and economic operation of a company.

The ordinary method is to send out inquiries to the district heads of sales for their estimates, on a monthly or quarterly basis. Naturally such estimates are heavily colored by any salesman's wishful thinking. Usually, the district estimates are developed by inquiries to the trade. The home office then assembles this "considered judgment" from the field and adjusts to past results with the assistance of an economist or statistician. The sales budget is then built around these estimates and is presented at the general sales meeting.

As a result of this method, unforeseen circumstances often develop which undermine the confidence of the management in the accuracy of the sales budget. If it has been too optimistic, plants are shut down to await developments. If the budgets have been too conservative, there is a scramble to increase production, with dangerous increases in inventory.

Contrast with the above the example of a well-known corporation which budgets its full year's operations on exact quantitative analysis, based upon completely factual and independent information, adjusted periodically to changing rate of sales, inventory, and other pertinent influences.

In 1921, this company led its industry as the first to measure the market on a national scale. Monthly sales figures by manufacturers' types were gathered in 31 states. These became the basis of the most minute checks on performance of every outlet in every county. Standard accounting systems became compulsory in every outlet at the same time. This enabled sales managers to set up bogeys in every department of the business—new products, used products, parts, and service—and gave direction to all corporate distribution, production, financing, and design efforts.

One outlet, as an example, estimated by rule of thumb it could sell 350 units for the coming year in a certain territory. The budget, laid down by the company's analytical methods, called for 500. It also included the type and size of units and the nature of the customers. Operations were geared to this basis; the outlet stepped up its merchandizing to this level; and approximately 500 units were sold. It works both ways.

The market potential is first determined for each county and populous neighborhood in the United States. The potential for each community is not proportional to the population of each; rather, each local potential is constantly raised or lowered with local conditions, *e.g.*, when a highway is diverted or an oil well dries up.

Shortly after engineering sales budgeting was started, the production department began to set production schedules on the basis of advance sales estimates—one month firm and two months tentative—as is the practice today. This was a complete reversal of procedure from the conventional practice of manufacturing first and then marketing the number produced.

The national sales potential of one division, as an example, was 40 per cent of its price class, 800,000 units a year, from 1936 to 1939. This basic potential is the governing factor in the number of franchises granted by the management for the distribution of its products; it also governs the location of each outlet and the rent it ought to pay; and no outlet can be added or replaced unless the potential statistically permits. The potential is designed to enable the 9,000 dealers to make 15 per cent on their capital over the business cycle.

To compensate for deviations from this base potential, a sales expectancy is minutely maintained to control weekly production of units by volume and by type. This may be more or less than the potential, depending on business conditions.

Each outlet reports its sales and inventory three times a month. Arriving at the regional office, these reports are summarized and wired to the head office. Every ten days the management knows how many units were sold the period before and how many are in stock. Knowing the current rate of sales and the normal seasonal movement, future sales are forecast for the remainder of the year. This forecast governs weekly shop production, orders to vendors, financing, and marketing procedure.

As the entire industry is well reported statistically, monthly sales of each product of each manufacturer in the industry are used to supplement the company's ten-day reports.

The result is that this company builds a major segment of the industry. In the tough period of 1929–1936, it was "in the black" every year. Three competitors were "in the red" in seven of the eight years; one lost money in five years; while two others similarly suffered in four of the eight years. The savings in costs, by reducing error to a minimum, are tremendous. Finally, a large degree of stability of employment results from explicit anticipation of demand.

Engineering accuracy, when applied to the sales budget, results in greater confidence to plan ahead, as well as operating economies and reduced cost of distribution.

V. Distribution Planning

That the future location of customers can be predicted within safe engineering limits is illustrated by an outstanding company. This company has for 40 years directed much of its management's talent toward creating an engineering basis for measuring future trends of its markets and consumers. These predictions are constantly adjusted to changing markets and consumers, in order to keep data five to twenty years ahead of current status.

The clear-cut problems of the company led to the development of a long-term analysis for the purpose of establishing distribution points which would anticipate the center of gravity of each market by twenty years.

For nearly forty years, under circumstances of increasing cost of labor and materials, the ratio of cost of distribution facilities to total sales has held within limits established in 1906. This ratio has been maintained in spite of vast and costly improvement in the quality of its product and services.

To maintain its "trend studies," the company has employed 300 engineers and a proportional field staff. Two principal surveys are prepared by these engineers as follows:

1. A general nation-wide study—a master yardstick, which is developed by assembling a vast amount of past and current information on the following items:
   a. Migration trends of all population types from one section of the country to another
   b. Power facilities
   c. Transportation facilities and costs
   d. Commercial transactions by geographical centers
   e. Manufacturing facilities and activity by types and classes
   f. Agricultural production

g. Wage rates in various geographical centers
h. Retail trade in each section

(These items and many other collateral studies are the basis of developing a "trend line" for the country as a whole and for various large districts. This over-all picture is first set up an then checked and rechecked. Data are never allowed to become a pile of dead statistics, but rather are used as a shadow of the past to project a living image of the future.)

2. Local district surveys, representing the working details in the trends established by the over-all surveys (Each local survey establishes distribution points and local product needs. Residential customers, as well as six classes of industrial customers—offices, retail stores, wholesalers, manufacturers, institutions, and hotels—are covered.)

The field staff develops an accurate picture of the potential market by securing data on the occupancy of every building.

Some districts require special attention. Buffalo, for example, where a resurvey was made in 1929, was again completely reviewed in 1932.

Product improvements can be accurately evaluated through these surveys even though they are primarily intended as a forecast of distribution needs.

In this case, "looking ahead" is accomplished by 300 engineers. But the same principle can be followed by a single engineer.

Where large investments in distribution service facilities are necessary, service-demand trends can repay their costs many times over.

VI. Pricing Policy

In one of America's most successful corporations, pricing has not been a matter of a bookkeeping routine, of guessing, or of competitive pressure. Instead, it has been a clear-cut policy, based upon carefully worked out scientific methods of determining exactly what prices should be in order to develop the widest possible markets.

In 1926, there was a showdown within the organization which resulted in the present pricing policy of the company. Up to this time, the management had been divided into two camps: those who believed in holding prices as high as possible and making the most out of each new product developed, and those who believed that there was an inevitable relationship between economic development, production, costs, and prices.

The latter group were convinced that, if prices could be reduced through improvement in manufacturing technique, new markets would open up. This group prevailed, and it was decided that, even in the case of products which involved a monopoly, prices would always be kept at a level to include only a reasonable markup from production costs.

It is significant that all price policies are the *joint decisions* of the sales, production, and research departments of this company. As a result of cooperation in pricing, these three forces have grown into an inseparable combination in all corporate activities. Each division of the company has a general manager. Under him are a director of sales and a director of manufacturing. The management considers it essential that these two personalities be cooperative, and adjustments are made until a harmonious combination is secured.

A traditional practice in the distribution procedure of the company is to discontinue high-pressure marketing of products that have finally become staple items, since gross profits become negligible. Staple goods must, of course, be at the mercy of the market.

In addition to a consistent price reduction, the operating profits of the business have climbed from 13 to 31 per cent since the policies outlined were adopted.

The application of systematic research techniques to pricing has the quadruple advantage of lowering prices, extending markets, reducing distribution costs, and increasing profits.

VII. Distribution Administration

One company, through uncontrollable economic circumstances, was losing a vital market for a substantial part of its direct sales. By engineering its distribution, this situation was reversed. In three years this company more than replaced lost volume by developing its distribution through jobbers. During this time jobber volume grew from 2 to 20 per cent of its total sales. This was completely new business to the company, representing many millions of dollars. Corporate mobilization of all essential departments achieved this result.

The significance of the rise of jobber sales from 2 to 20 per cent is clear when it is noted that, during the period that this rise was occurring, jobber sales percentages for the entire industry were dropping.

It is interesting to trace the organized procedure of this company. First, the market-research division of the company studied the market which had supplied the major source of the company's direct sales. From this study it was clear that this market would not return to normal for many years, since 92 per cent of potential in its original field was wiped out during the early depression years. The possibility of a comeback of this industry in sufficient proportions to restore this lost source of business was hampered by restriction of the long-term source of capital funds, drastic increase in production costs, and undermining of long-term confidence.

The technique employed by this company to expand its jobbing outlets was:

1. A complete analysis of all products of the company, with particular consideration of all classes of products, currently distributed through all jobbers (This study was conducted in every section of the country and required more than two years of solid effort to complete. Every possible consumer of steel products, large and small, was investigated. Through the intensity and thoroughness of

this analysis it was possible to locate tonnages of steel which had never before been charted.)

2. A detailed market analysis of the possible channels of distribution of each class of products
3. A geographical classification of the actual and potential jobbers prepared to handle each product
4. Proposed list of products for which jobbing outlets were to be sought and developed

From this analysis it then became possible for the management to choose a definite list of jobbing outlets for each of the selected products. With this initial information, a complete study was made by engineers of all principal corporate divisions of the company to determine what steps would have to be taken by each division, in order to acquire and develop the selected jobbing accounts within a limited time.

The means of securing each jobbing account were specifically analyzed and appropriate action was determined upon before any direct moves were instituted. The selection and acquisition of each jobbing outlet represented the use of the *combined* management resources of the company.

Based on the analysis of the markets for its products, a large and a small jobber were secured in each major distribution territory, and a sales-volume quota was established. As an incentive, the principal jobber was given practically an exclusive arrangement and a particularly attractive discount. In territories representing smaller volume a nonexclusive policy was followed. As an example, in the New York City district the principal jobber handles 95 per cent of the company's business sold through this type of outlet. In some instances, the company provided strong direct-selling assistance, lending trained personnel to the jobber to improve his general merchandising procedures. Indirect temporary financial assistance was granted some outlets, and in other cases the company undertook to pioneer the development of new markets for the jobber.

Market research, engineering classification of products and channels of distribution, the direct assistance of the purchasing organization, of the treasurer's department, and of negotiating personnel, and all the facilities of the sales department were applied in the accomplishment of this corporate objective. The exhaustive study which showed the direction of action required would not have produced the tangible results without the coordinated effort of each principal division of the company's management.

Many companies have decentralized management resources which could be marshaled, under a properly engineered plan, to secure maximum distribution efficiency.

VIII. Diversification

In 1928, a company having 92 per cent of its potential market in a major field began to study the question of expansion into new fields.

Before any direct action was taken by the company, a number of engineers were employed to investigate thoroughly seven different industries. These engineering studies represented thorough analyses of the existing markets of each industry, their history, current and projected volume, pricing trends and discounts, and distribution procedures of the principal companies in each industry. A complete pattern of the prevailing selling practices employed in each industry was developed.

In addition, current products were catalogued, raw materials studies, production costs analyzed, equipment and techniques involved in the manufacture of each product thoroughly appraised. The frequency of new-product designs, the time interval for public acceptance of new products within each industry, estimates of man power required for definite schedules of production, and other pertinent factors were analyzed.

While the foregoing steps were being pursued for each of the seven industries selected, other engineers made a complete investigation of the company itself, to find out how its aptitudes and facilities would match the opportunities disclosed.

The final selection of the industry that offered the best field for expansion was determined by weighing and comparing scientifically accurate data. While this company was and is rich in executive ability, those executives realized that judgment, like justice, is blind until all pertinent facts are available. Sixteen years of proved results testify to the soundness of the decisions which ensued.

A by-product of planned expansion was the setting of a definite objective for product-development work. Previous to this orientation, the new-products department had scattered its efforts in all directions. Miscellaneous items from automobile horns to fire extinguishers were constantly popping up, with little or no thought as to how they would be distributed.

With a direct objective for developing products, eighteen new ideas have been adopted and pushed to a leading position in the new industry.

Systematic research is particularly important in diversification of a business, because impetuous ventures into new fields are often responsible either for company failures, or more frequently, for losses that pyramid distribution costs.

IX. Product Development

The company covered in this example is noted for its new product development. *This company has a cardinal principle of expanding only into established markets in which it can engineer a superior product, turning it out cheaper and in vaster quantities.* This policy is based on the use of its basic fabricating process.

With a single unique processing method, developed during the First World War, this company has applied manufacturing advantages to the development of one product after another, until today it is the predominant factor in many markets. This is the record of its expansion in applying its basic production technique to new markets:

1921—One particular machine, developed twenty-three years ago, still maintains the company as the lowest cost product in the field, yielding 40 per cent of the available business, with customers feeling no temptation to build their own product.

1925—The same basic fabricating process was applied to products for another industry, which an analysis showed as holding a great opportunity. Starting with a single customer, by the end of the year 23 additional customers had been added, and this newcomer found itself with 90 per cent of all the business for this product in the United States.

1927—The company erected a new plant with a huge capacity to manufacture a product which it had spent three years developing for another industry. The product was not only larger, more uniform, and cheaper than that previously used, but by its method of manufacture (basically the same as that first applied in 1921) wall thickness could be cut down without losing strength, thus effecting still greater economies in the use of the raw material. The analysis of the potential in this particular market was completely accurate, with the demand for the product reaching a tremendous peak in the late twenties and early thirties.

1933—Thoroughly analyzing a field dominated by competitive materials fabricated by other processes, the company, in recognizing the potential in this market, designed a new, less costly, and superior product, again using its basic process.

1935—Having effectively studied the opportunity for a companion product to supplement that developed in 1927, the company introduced one by simplifying the manufacturing process and producing a more economical end result. Since that time, it has acquired two established companies to further round out its position in this field.

1937—The company undertook the development of additional products for its consumer-goods markets in which its basic processing advantage would apply. As a result of the success of the application of its production technique in the consumer-goods field, the next depression will not catch the company undiversified.

Product development can be costly or even ruinous if the manufacturing skills which characterize a particular company are not first identified and then directed, by an organized procedure, to the markets which present the greatest opportunity for those skills.

X. Market Development

The costly procedure of attacking markets just because they "look attractive" should be corrected. While it may appear academic to the casual observer, an investigation of the causes of failure to "crack" obvious markets should start with four obvious questions.

1. Does the market *actually* have the potential it appears to represent, or is it a new-business mirage not worth major attention?
2. What are the essential characteristics and requirements of the market?
3. What can the company do to meet these requirements?
4. Can the company make a real *contribution* to the mutual advantage of all concerned?

Not many years ago a certain company undertook the development of an "obvious" market which it had been unable to "crack" previously. Four major attempts and an annual assortment of sporadic attacks in twenty-two years had cost many hundreds of thousands of dollars of direct expense alone. Yet the challenge always remained—a huge industry representing an enormous potential source of business.

With this background the decision was made to "lay the ghost" once and for all by a thorough investigation of the actual market potential, the essential characteristics of the business, and the contribution to be made for mutual advantage. A long-range program of investigation and commercial research was undertaken.

Field interviews, conducted by engineers, disclosed the scope and attractiveness of the market and the portion available to the company. The previous year, the total sales of the eight most important prospects were in excess of $2,600,000,000 and the total of 31 companies in the industry was $3,146,000,000. The purchase of the particular product in question, by these companies, was a microscopic $^{3}/_{100}$ of 1 per cent of their sales. In similar industries, this ratio, confirmed over years of application, varied from 2 to 6 per cent. From this disclosure it was apparent that the industry in question was not convinced of the economies to their business of the use of the product.

A goal was established on completion of this market survey. The business to be obtained from 90 companies in the industry was budgeted from the findings established by the work of four technicians, engineers experienced with the industry, and 11 field workers.

Costs were budgeted against these estimates, and the company now had a clear perspective, for the first time, of the job to be done and what was required from each division of the company to execute the program.

After this crystallization of a realistic goal, the management then launched the major stage of the research program.

It was found that most companies in the industry comprised three completely different types of business rolled into one. The research clearly showed that this grouping of totally different types of business within one corporate structure had been a confusing factor in past marketing procedure. Also the fact that the lines of management in most companies of this industry followed the over-all corporate structure rather than the functional units of the business had served to make it "impossible to see the trees for the forest."

On the basis of these simple disclosures, and with the support of a reclassification, it was possible to demonstrate the advantages of the company's product to *each* separate unit of the business, making three sources of potential business with each prospect.

Much wasted sales expense can be saved, and directed into constructive market development, by an engineering investigation of the actual requirements of a given market.

XI. Organization

This example deals with a world-famous company whose management in 1914 began a policy of basing its entire sales program on systematic preparation of its sales personnel to prevent failure of *any* salesman at the point of sale. The degree of concern on this one point is so intense that the head office is immediately advised of each lost order. Swinging into action, the management completely reviews the situation, not only with the salesman but with his branch manager and with his district manager, to determine the cause and to prevent recurrence.

In 1927, a long-range plan was organized. One hundred and forty college graduates were brought in as prospective salesmen. Thereafter, until the war, the normal salesmen's class was 50 meticulously selected college men.

Intrinsically, the sales force is different from others in the following vital factors.

1. Complete engineering analysis to predetermine all possible conditions a salesman may be required to face to complete a sale
2. Rigorous standards imposed upon average-type applicants, to make sure they are right material for this company (Managers of the company conduct a nationwide combing of each year's crop of college graduates. Selection is based on average scholastic ability, accounting and business training, campus managerial record, and sales personality)
3. Consistent indoctrination of the individual in the methods required to make a sale under all conditions
4. Complete discipline of a salesman's working hours and sales efforts and supervision of his results, supplemented by periodic evening educational sessions

5. Recognition and reward of the individual through internal sales-force competition, with constant stimulation through contests and comparisons
6. Making the salesman feel that sales records and reports are for his assistance as well as for the company's
7. Youthful vitality in the sales force (The average age of the 600 to 700 salesmen is thirty-two. Their vitality, ever pointed to completing each sale, is maintained by periodic classification of each salesman on a basis of results. If a man in the "third third" cannot improve after adjustment of position, location, and further education, there is no incentive for him to continue with the company)

While the individual is regularly impressed with his potential leadership, he is systematically indoctrinated to live and breathe his company so that he will be capable of closing each sale.

Maximum sales results can be obtained at least cost by systematically conditioning a sales organization in the predetermined methods required to complete each sale.

XII. Foreign Distribution

One American company, which systematically developed its foreign markets over a period of forty-five years, had half its total sales in foreign markets by 1928. As an indication of this company's success, average annual dividends, to 1940, were two million dollars.

The stability and success of this enterprise can be traced to the consistent policy adhered to by the management in establishing native management in each country with full authority to manage the operations of the company.

The question of foreign sales was first raised in 1894, when the United States business was almost at a standstill. Several unsuccessful trials in Switzerland and Germany, where similar products were nonexistent, convinced the management that haphazard selling in foreign markets has its disadvantages. Spurred by this experience of the ineffectiveness of distributing European products from Buffalo or Detroit, they established an English warehouse branch in 1895 with an original investment of $55,000, a stake which was repaid in eight months. From this base of operations, the organization of the fundamental distribution for all subsequent foreign markets was laid out. The resultant foreign investment on the books of the company was $25,000,000 in 1939, yielding sales in excess of $22,000,000.

The basic elements of this policy are summarized as follows:

1. Recognition that manufacture of the products should eventually take place in the consuming country
2. Management native to the country, with complete authority, as soon as suitable personnel can be trained to administer the business
3. Adaptation of the design of the product to the consumer demand of the country
4. Establishment of a strictly graft-free procedure throughout the operations of the country
5. Creation of one trading center to sell in countries in which manufacturing facilities are not justified, purchasing products from subsidiaries in other countries offering lowest cost
6. Strict maintenance of the independence of each national unit, limiting American supervision to two over-all advisers, with several traveling auditors
7. Allowing local capital participation where the national laws so decreed or good-will factors made it advisable

The organized procedure for opening a market in a new country was equally strict in observance of the importance of *native* conditions and preferences.

The market potential was first investigated to determine the justification for entering the country. This was usually performed by specialists in foreign trade.

Distribution was started through established channels, preferably native born. When the volume of business justified, a branch, staffed by native-born company representatives, would be established.

Finally came the establishment of a plant; the training of complete native management; and the withdrawal of American personnel.

The consistency of a systematic policy and procedure in regard to native administration for foreign markets had helped the company surmount political upheavals, exchange problems, economic depressions, and even war. Those in occupied or enemy countries in 1939 and 1940 were left in the hands of their competent native top managers—a consolation which few American companies can enjoy.

Stable and low-cost foreign distribution can result from consistent application of engineering techniques by native administration.

CHAPTER XV

SYSTEMATIC THINKING APPLIED TO FUTURE OPERATIONS—DEVELOPING AN AGENDA FOR THE BUSINESS AS A WHOLE

By G. E. Conkling

The following outline is based on a procedure originally developed by G. E. Conkling, a business consultant, for the postwar planning of a wide variety of companies. Although "postwar planning" achieved, for a while, a sort of Sunday-supplement popularity, the techniques involved are actually no different from any advanced planning, as the general applicability of the points will demonstrate. Again, it will be interesting for the reader to check the "Establishment of Basic Policies," and "Working Procedure" referred to here against this book's check points on page 73.

In thinking about the future operations of the business as a whole, a basic working premise may be assumed: *Operations following the Second World War will return less net per dollar of sales (after taxes) than was customary in prewar business.* Therefore practically every business which is engaged in future planning is aiming at a greater gross income to compensate for the lower net. However, the greater gross alone is not the answer. Additional margins will have to be wrung out of increased efficiency. Design, manufacture, and distribution must be scrutinized equally for these possibilities, along with opportunities for increased volume. It may be necessary to consider radical changes in methods.

It is the purpose of this outline to furnish a logical agenda for a step-by-step analysis of the basic policies upon which the future profits of the business depend.

Basic Policies

The basic policies which lead to greater gross income are

I. *Increase sales of established products*
   A. By more intensive marketing effort
   B. By improved design and manufacture
   C. By developing new uses
II. *Add new products*
   A. Made with existing facilities for established markets
   B. Requiring new facilities but for established markets
   C. Made with existing facilities for new markets
   D. Totally foreign to the business
III. *Build up supplementary income*
   A. Licensing patents
   B. Enlarging service operations
   C. Manufacturing for others

In some cases, the history of the organization and the importance of certain recognized future operating conditions will automatically determine the proper policy or policies. In other cases, further investigation and analysis are required. These are provided for in the Working Procedure.

Working Procedure

A systematic Working Procedure can be developed under each basic policy. In every case, this procedure will embrace the following:

1. What controlling factors are involved?
2. What additional information is needed?
3. What basic questions can be settled now?
4. What program of action (assignment of work) can be formulated?
5. What checks to gauge progress can be set up?
6. Progress records and conclusions

In practice, it was found helpful to develop special four-page forms for each of the ten basic policies mentioned under I, II, and III. These forms could be passed around to appropriate executives for study and comment, space being provided on each one for comments, special questions, suggested assignment of work, and the like. The main purpose of the form was to induce consideration of each basic policy in the light of the steps outlined in the Working Procedure. Numerous special check questions were included.

To save space here, the content of each four-page form is given, rather than reproducing a facsimile of it.

IA. Increase Sales of Established Products by More Intensive Marketing Effort

1. *What controlling factors are involved?*
   - *a.* Will the trend of need for our products be upward or downward, based on past records of our industry's growth, in the light of reasonably "nonpanic" postwar conditions?
   - *b.* To what extent will growth be natural? To what extent must we promote it?
   - *c.* Do the buying practices of our established markets assure us reasonably satisfactory types of customers?
   - *d.* Do the actions and policies of our competitors permit a sound business operation?
   - *e.* Do we know whether there are natural rhythmic or cyclical trends in our business? What is their effect?
   - *f.* To what degree have we actually covered our markets in the past? What is our standing relative to competition?
   - *g.* What have been our production, sales, and service costs in relation to competition?
   - *h.* What is the comparative record of other possible methods of sales or distribution? Could any of them add volume that has not been secured in previous operations? What over-all discounts are involved? What time is required for capital turnover? What inventory may be required? What relative sales-effort and merchandising help is required in each method?
   - *i.* What percentage of growth, over prewar, can be handled with our existing equipment and production facilities?

   j. Are important changes in manufacturing methods and material contemplated within our industry?
   k. Special factors
2. *What additional information is needed*?

   Examples: (1) Correlation of existing records and experience data. (2) Market surveys and checks. (3) Independent measurements of previous market coverage. (4) Studies of new procedures in sales control, advertising, and distribution
3. *What basic questions can be settled now?*
   a. Is there a practical opportunity for profitable increased volume on existing products? In what reasonable amount? At what relative price levels and budgetary performance? At what increase in personnel?
   b. Or is it desirable to use the postwar reconstruction period as the time to break away from existing products and/or markets?
   c. Can our sales and sales-promotion procedure be replanned, intensified, and more closely controlled to achieve the desired increases?
   d. Would the use or addition of any new channel of distribution add to the over-all effectiveness of our marketing effort? Will any addition to or change in distribution help level out our sales curve?
   e. Is an additional variety of sizes, and quality, desirable to satisfy requirements of unreached portions of the market? Or is the job to adhere to simplification, coupled with greater educational effort on present standards?
   f. What can we do to make it easier for the customer to buy out products?
   g. What increase in efficiency could be gained by modernization of manufacturing?
   h. What new buildings and land may be needed for expansion?
   i. How much additional money may be needed for increased working capital?
   j. What course of action is necessary to ensure availability of any required new capital?
   k. Special questions
4. *What program of action* (*assignment of work*) *can be formulated?*

   Examples: (1) Pilot-territory tests of intensified marketing efforts. (2) Direction of present advertising toward future marketing objectives. (3) Budgetary performance forecasts

5. *What checks to gauge progress can be set up?*

   Examples: (1) Evaluation of increased sales against cost of selling and promotion. (2) Reactions of customers and prospects. (3) Appraisals of economies in over-all sales and sales-promotion efforts secured by methods and controls. (4) Volume and time performance of new channels of distribution

6. *Progress records and conclusions*

IB. Increase Sales of Established Products by Improved Design and Manufacture

1. *What controlling factors are involved?*
   - *a.* Does the market invite growth? (See factors listed in Section IA.)
   - *b.* Will our customers have needs which could be well served through improved products and redesign?
   - *c.* To what extent is competition apt to offer important improvements?
   - *d.* To what extent is our market volume determined by price, design, sales appeal?
   - *e.* When was our design and packaging last improved?
   - *f.* What is our standing relative to competition? What is the trend?
   - *g.* To what extent have our actions been affected by competition in the last two years of normal business?
   - *h.* What new materials might be used in our product?
   - *i.* What different processes or manufacturing methods are available?
   - *j.* Special factors
2. *What additional information is needed?*

   Examples: (1) Study of competitive position as affected by product improvements. (2) Review of new materials. (3) Review of new production techniques

3. *What basic questions can be settled now?*
   - *a.* Are changes or improvements in products necessary to gain a wider share of the market or to anticipate increased competition?

   - *b.* Should experimental work on new materials be set up or intensified now?
   - *c.* Do we need a new slant on design?
   - *d.* Will new facilities and equipment be needed for production of improved products?
   - *e.* Should outside facilities be investigated for contract work or for possible purchase?
   - *f.* What new capital may be required, both for facilities and for market expansion?
   - *g.* Special questions
4. *What program of action (assignment of work) can be formulated?*
   Examples: (1) Exploratory work on new materials and design. (2) Display and demonstration of new models, etc. (3) Test sales. (4) Spot production during periods of temporary release of governmental controls
5. *What checks to gauge progress can be set up?*
   Examples: (1) Engineering estimates on manufacturing economies. (2) Laboratory test records. (3) Service records on test sales. (4) Customer satisfaction with design and appearance
6. *Progress records and conclusions*

IC. Increase Sales of Established Products by Developing New Uses

1. *What controlling factors are involved?*
   - *a.* Have special or unusual uses been made of our products?
   - *b.* Are any additional uses suggested by war experiences or by probable postwar interests?
   - *c.* Can other new uses be found through research?
   - *d.* For what products could ours be substituted? What other products might substitute for ours?
   - *e.* What is the market potential for new uses?
   - *f.* Special factors
2. *What additional information is needed?*
   Examples: (1) Records of all uses by previous customers. (2) Survey of new uses during the war period. (3) Study of unfilled needs. (4) Collation of ideas from outside sources. (5) Suggestion contests. (6) Market appraisals for new uses.

3. *What basic questions can be settled now?*
   - *a.* Is there a chance for new uses to contribute a substantial gain in our volume?
   - *b.* Can these new uses be promoted with reasonable effort?
   - *c.* Is any further research or engineering needed before trying for test sales for new uses?
   - *d.* What is the best procedure to stimulate test sales for these purposes?
   - *e.* Are there any special war tie-ins which will give us a start on additional new uses?
   - *f.* Special questions
4. *What program of action (assignment of work) can be formulated?*

   Examples: (1) Use of present sales personnel to promote interest in new uses. (2) Direction of present advertising to this subject. (3) Tests on possibilities of effecting substitutions through new uses.
5. *What checks to gauge progress can be set up?*

   Examples: (1) Measurement of effort required to start and to extend new uses. (2) Analysis of customer attitude. (3) Examination of any special requirements to be met in design, production, or distribution.
6. *Progress records and conclusions*

IIA. New Products which Can Be Made with Existing Facilities and Sold to Established Markets

1. *What controlling factors are involved?*
   - *a.* Do we have up-to-date market information for products of this type, now in our laboratories or on paper?
   - *b.* What do our customers say as to interest in these products? Would they welcome us as suppliers?
   - *c.* What unsolved problems do our customers have that might relate to our operations?
   - *d.* What experiences have we gained in war work that suggest new products?
   - *e.* What available patents and licenses should be studied now?
   - *f.* What going businesses might be purchased or consolidated as a foundation for related new products?
   - *g.* To what extent will we have free capital for expansion into new products?
   - *h.* Special factors

2. *What additional information is needed?*
   Examples: (1) Market exploration, including commercial appraisal of new techniques acquired on war work. (2) Location of attractive new patents and available licenses. (3) Search for other businesses which might be acquired
3. *What basic questions can be settled now?*
   - *a.* Will we be adding new products that will complete our line, or will we be setting up separate new departments?
   - *b.* If a way can be found to make immediate sales, are we ready with any of the new products already in hand?
   - *c.* If our customers indicate a desire for us to offer a new product which fits our facilities, are we ready to put it on paper? Are we able to produce samples, and individual test orders? Or can we contract for this work in order to get started now?
   - *d.* What negotiations should we start now on patents and licenses?
   - *e.* What feelers should we put out now in respect to purchase of other businesses or consolidations?
   - *f.* Will we require additional capital for new products? How much? When?
   - *g.* Special questions
4. *What program of action (assignment of work) can be formulated?*
   Examples: (1) Introductory sales effort. (2) Appraisal of new patents and available licenses. (3) Preliminary conversations in respect to purchase or consolidation of other businesses
5. *What checks to gauge progress can be set up?*
   Examples: (1) How well does the product live up to its tests in service? (2) Does test-sales effort show that the product can be sold at the anticipated price with reasonable effort?
6. *Progress records and conclusions*

IIB. New Products Which Are Salable to Established Markets but Which Require New Manufacturing Facilities

1. *What controlling factors are involved?*
   - *a.* What types of products should be investigated?
   - *b.* What patents, licenses, and developments should be examined?
   - *c.* What going businesses might be purchased?

- *d.* What unsolved problems or needs do our customers have which we might serve? What is market potential? Best marketing plan? Competition? Would our customers welcome us as suppliers of these new products?
- *e.* Are radical changes in production, design, or distribution methods being contemplated by the industries now making the products that are being considered?
- *f.* Will new capital be required?
- *g.* Special factors

2. *What additional information is needed?*
   Examples: (1) Survey of special needs of existing customers. (2) Report on manufacturing practice for products under consideration
3. *What basic questions can be settled now?*
   - *a.* How can we assure efficient production of a product with which we have no experience?
   - *b.* Should we start by selling through the existing sales force or are specialists needed?
   - *c.* Can new products of this type take our regular overhead or should they have a special setup?
   - *d.* Will products of this character strengthen our position as a whole?
   - *e.* What arrangements for necessary capital should be made?
   - *f.* Special questions
4. *What program of action (assignment of work) can be formulated?*
   Examples: (1) Selection of key personnel for manufacturing. (2) Laboratory or pilot-plant production, possibly subcontracted at start. (3) Sales tests. (4) Budgetary forecasts
5. *What checks to gauge progress can be set up?*
   Examples: (1) Evaluation of pilot production in terms of future manufacturing costs. (2) Sales performance. (3) Service and complaint record. (4) Harmony or interference with established business
6. *Progress records and conclusions*

IIC. New Products Which Can Be Made with Existing Facilities but Which Require Opening of New Markets

1. *What controlling factors are involved?*
   - *a.* What types of products should be investigated?
   - *b.* What experiences have we gained in war work that suggest new products?

  - *c.* What patents, licenses, and developments should be examined?
  - *d.* What going businesses might be consolidated?
  - *e.* What is market potential and competition? What are buying and sales practices?
  - *f.* Would the new products have any effect on our existing good will?
  - *g.* Are radical changes in production design or distribution methods being contemplated by companies already making these products?
  - *h.* How much money will be required for promotion and other purposes?
  - *i.* Special factors

2. *What additional information is needed?*

   Examples: (1) Review of new products made for war purposes which might be retained for postwar business. (2) Studies of markets, competition, and sales and distribution methods. (3) Location of new patents, licenses, and going businesses which might be taken over

3. *What basic questions can be settled now?*
   - *a.* Will the products under consideration lead us into the new markets which we consider most desirable?
   - *b.* Are the products good enough to break through established competition?
   - *c.* Are the business methods involved for the new products in harmony with our policies?
   - *d.* Would the new products help to level out seasonal or other variations in our sales? Or would they add to present peaks?
   - *e.* Will the products require a separate sales or organization?
   - *f.* Will they carry our regular overhead?
   - *g.* Can the products be brought to a break-even point with a reasonable outlay for sales development expense?
   - *h.* What arrangements for working capital will have to be made?
   - *i.* Special questions

4. *What program of action (assignment of work) can be formulated?*

   Examples: (1) Product tests. (2) Experiments on manufacturing technique. (3) Sales tests. (4) Budgetary forecasts

5. *What checks to gauge progress can be set up?*

   Examples: (1) Service records and complaints on trial sales.

(2) Performance of advertising. (3) Effectiveness of sales and sales-control methods

6. *Progress records and conclusions*

IID. New Products Totally Foreign to the Business

1. *What controlling factors are involved?*
   - *a.* Are products foreign to our existing business desirable for any specific reasons?
   - *b.* What available patents, licenses, developments, and needs should be investigated?
   - *c.* What going businesses might be purchased or merged?
   - *d.* What is the market potential?
   - *e.* What buying and selling practices are involved?
   - *f.* What is the competition?
   - *g.* What capital will be required? In development?
   - *h.* What is the budgetary forecast?
   - *i.* Special factors
2. *What additional information is needed?*

   Examples: (1) Market appraisal. (2) Records and methods of other companies that sell similar products. (3) Budgetary forecast
3. *What basic questions can be settled now?*
   - *a.* Does the product under consideration offer enough opportunity to warrant the attention and risk required?
   - *b.* Are we certain that the experience and capital which we can contribute is sufficient for the job?
   - *c.* Are we prepared to see the product through all of the troubles of the development stage?
   - *d.* What corporate setup is most desirable? At the start? Later?
   - *e.* Can the policies involved in operation of the new enterprise fit into those of our established business?
   - *f.* Special questions
4. *What program of action (assignment of work) can be formulated?*

   Examples: (1) Selection of key personnel. (2) Preliminary manufacturing arrangements. (3) Test sales
5. *What checks to gauge progress can be set up?*

   Examples: (1) Ability and adaptability of personnel. (2) Development of production and proper costs. (3) If going business is to be acquired, measurement of any change in good will and efficiency through the transfer. (4) Sales progress

6. *Progress records and conclusions*

IIIA. Build Up Supplementary Income by Licensing Patents to Others

1. *What controlling factors are involved?*
   - *a.* What contribution does our present patent position make to the success of our business?
   - *b.* What use would our patents have to others?
   - *c.* How strong are the patents?
   - *d.* What licensing income might be developed?
   - *e.* How long could we expect this to last?
   - *f.* Special factors
2. *What additional information is needed?*

   Examples: (1) Determination of specific uses of the patents and of the market for licensing. (2) Evaluation of scope of patents and market potentiality of the invention for purpose of licensing. (3) Review of procedure used and results obtained by other companies in licensing patents which offer comparable types of advantages
3. *What basic questions can be settled now?*
   - *a.* Would licensing of our patents be beneficial in net results during life of patents? What would be the effect on our business afterwards?
   - *b.* What are the legal limitations of a licensing policy?
   - *c.* How should licensing be handled? By a patent department, by a business executive, by a patent attorney?
   - *d.* Special questions
4. *What program of action (assignment of work) can be formulated?*

   Examples: (1) Set up of licensing procedure or arrangements. (2) Demonstrations and development of supporting technical and commercial evidence. (3) Drawing up licensing agreements. (4) Negotiations
5. *What checks to gauge progress can be set up?*

   Examples: (1) Time involved in closing licensees. (2) Concessions required. (3) After-licensing difficulties to get licensees started
6. *Progress records and conclusions*

IIIB. Build Up Supplementary Income by Enlarging Service and Repair Operations and Parts Distribution

1. *What controlling factors are involved?*
   - *a.* What percentage of repair parts used in our products are made by us?
   - *b.* What percentage of the repair, maintenance, and reconditioning service required is performed by us? Would users prefer that we rendered a wider service along these lines?
   - *c.* Do prices customarily paid for these services invite an expansion of the activities?
   - *d.* What effects do our existing methods and policies on these matters have on our reputation?
   - *e.* Will we have idle facilities which logically could be put to these uses?
   - *f.* Special factors
2. *What additional information is needed?*

   Examples: (1) Further study of repair parts and service market with special attention to customer relations. (2) Preliminary budgetary forecast.
3. *What basic questions can be settled now?*
   - *a.* Do we have an opportunity here to add volume to any substantial degree?
   - *b.* Will our good will be increased?
   - *c.* Do we have the additional free capital to tie up in such business?
   - *d.* Will idle facilities put to this use be as productive as if used in other ways?
   - *e.* Special questions
4. *What program of action (assignment of work) can be formulated?*

   Examples: (1) Allocation of available idle facilities. (2) Sales tests in pilot territories. (3) Rechecks on customer satisfaction
5. *What checks to gauge progress can be set up?*

   Examples: (1) Ability to meet cost bogeys on test sales (probably measured in man-hours). (2) Customer attitude measurement. (3) Rapidity of turnover of parts stock
6. *Progress records and conclusions*

IIIC. Build Up Supplementary Income by Manufacturing for Others

1. *What controlling factors are involved?*
   - *a.* What types of work do we do with more than usual skill?
   - *b.* What percentage of our capacity is idle in a normal year because of seasonal variations?
   - *c.* In normal times, how much additional work could be floated in extra shifts during our busy seasons?
   - *d.* How much subcontracting was done in prewar years by industries which we might serve within a reasonable distance of our plants?
   - *e.* What percentage of the products of our industry has been sold as private brands? What part of this has been distributed by outlets which have the reputation of allowing an intelligent manufacturer to make a fair profit?
   - *f.* Do these outlets serve consumers whom we would not ordinarily reach?
   - *g.* Special factors
2. *What additional information is needed?*

   Examples: (1) Analysis of kinds of work done in relation to the special needs of others. (2) Survey of availability of facilities. (3) Study of pros and cons of private brands
3. *What basic questions can be settled now?*
   - *a.* Should we deliberately seek an income from manufacturing for others?
   - *b.* What percentage of our facilities could profitably be devoted to this work?
   - *c.* What connections could we make to gain a balance of business when our own production is off?
   - *d.* To what extent can such operations absorb existing overhead?
   - *e.* Can private brands be handled so that they will add to, rather than interfere with, existing business?
   - *f.* Special questions
4. *What program of action (assignment of work) can be formulated?*

   Examples: (1) Discussion of subcontract work with most favorable prospects. (2) Development of private brand policy to ensure added profit and stability with minimum interference with existing business. (3) Test operations on private-brand sales

5. *What checks to gauge progress can be set up?*
   Examples: (1) Measurement of test-sales progress. (2) Percentage of rejects. (3) Degree of inventory accumulation required. (4) Degree of complaint on private-brand policy from existing distributors
6. *Progress records and conclusions*

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